University News

A WEEKLY JOURNAL OF HIGHER EDUCATION MONDAY, SEPTEMBER 16, 1996 Rs. 7.00

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UNIVERSITY NEWS

VOL. XXXIV SEPTEMBER 16
No. 38 1996
Price Rs. 7.00

A Weekly Journal of Higher Education published by the Association of Indian Universities

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Editor :
SUTINDER SINGH

Higher Education Delivery Systems — Trying the TQM Option - I

Nimit R. Chowdhary*

Introduction

Irony of today's India is that the two classes — Lawyers and the Teachers who led the masses to independence some fifty years ago have lost their drive and initiative. In fact they are the ones who are the most frowned upon and are today in a wretched state of affairs.

Having decided to direct my energies to contribute to the effort of extension of education, I think it to be my foremost duty to introspect, analyse and suggest remedial measures to arrest this downfall, we are facing in the delivery of education particularly so in the university set-up.

Society today, views the teaching fraternity with dismay. While some of the fears and apprehensions expressed by them appear to be a trifle exaggerated, their projections and discontent are not entirely unfounded. There is no gainsaying that for teachers the need for doing some honest introspection is stronger than ever. Sadly enough, people's trust and confidence earlier reposed in teachers and the education system is already fast dwindling to a large extent. With precipitous fall in the teaching standards and ethics, the education system has taken on the characteristics of a stale and sordid bureaucratic order.

It is high time, we rise, recognise for, communicate about, monitor and relentlessly improve upon all the aspects of delivery of education in our universities.

In younger set-ups, like the university, the processes and the procedures are developed out of specific needs of doing specific tasks for the first time at some point of time. The processes are developed in haste to meet, quickly the immediate need to serve a small internal population and a small consumer base. After a very modest beginning they (the processes and procedures) are neglected and ignored. They are never updated to keep pace with the requirements of the contemporary environment. No one ever takes pains to review, refine and update them. As the organisation grows, the responsibility for these processes gets divided among many departments and additional checks and balances are put in places as these young institutions grow. Little pools of bureaucracy are born. One signature is replaced by two, three, or even more. Pages and more pages are added to a notesheet to complete its transformation into a full-fledged file, while the issue is lost for ever. Bureaucracy becomes the rule rather than the exception. New patches are put on top of the old patches. No one really understands what is going on, so no one can really audit the process to ensure that they are operating effectively and efficiently. In this bureaucratic maze the concept of external consumer is lost. The organisation becomes all the more inward focused, process oriented

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(means become ends in themselves) and people fail to understand the impact of their activities on the external consumers. This is fatal for a contemporary organisation.

Consequently the processes and procedures in the university have become ineffective, antiquated, overly complicated, burdened with bureaucracy and very time consuming. While we are beginning to accept this bureaucratic set-up as a necessary evil, this is increasingly hampering the university's ability to grow and compete.

The recent, opened up and liberalised higher education policies in India and the world has made the environment extremely competitive. It is very difficult for Higher Education Delivery Systems with slow, ineffective processes and procedures to survive this vibrant and dynamic new environment. There are a number of management tools like Kaizen, Flexible Organisational Architecture, Business Process Re-engineering, etc that are being offered as a plausible answer to the problems of present scenario. They suggest the use of capabilities of modern management technologies to restructure the very process, that is, delivering higher education, so as to enhance its efficiency manifold. They all eventually lead to Total Quality Management (TQM). It is that the universities must seed their rigid structures and become more adaptive and responsible to the requirements of its internal and external environments, and that they must follow a process oriented approach instead of the traditional specialisation oriented bureaucratic approach.

The traditional model, calls for aligning to the guidelines of the National Policy for Education for the so called Quality Performance. We in turn, somehow manage to cling to the standards to report quality performance on records. Important it is to evaluate that how well do we follow the quality precepts in spirit. We need to justify the structure, the process delivering higher education rather than the meagre end results. In fact the entire evaluation must be based on process rather than on results window dressed on records. Second, it is interesting to note that these 'gold standards' are not standards in all the situations. Their validity may be questioned with the passing of time — needless to say that we face a very dynamic and vibrant competitive environment.

Say, for example, to achieve quality in teaching, the existing institutional framework provides for some pre-testing tools like the 'National Eligibility Tests' and State Level Eligibility Tests. Now if I am a teacher of ten years standing who qualified these quality tests some 12 or 13 years back, how do you ensure my quality performance today. First, their is no perfect corelation between my teaching competence and my knowledge-base. Second, how relevant is my antiquated knowledge-base today, is to be questioned. Third, there is no appraisal mechanism to appraise my contributions of today — have I grown and developed as a teacher over this period of time. Continuous improvement is the ultimate requirement today in the fast changing world of knowledge and education. We need to keep pace.

TQM as a Paradigm Shift

Total Quality Management (TQM) is a conceptual approach different from Quality Assurance (QA) and Quality Inspection, and runs counter to many underlying assumptions of professional bureaucracies. It calls for continuous and relentless improvement in the total process that provides education, not simply in the improved actions of individual professionals. Improvement is thus based on both outcome and process.

Following is what the teaching leadership must learn to implement TQM successfully :

- Management must learn the meaning of quality including an understanding of the importance of the customer and that there are multiple customers in the delivery process.
- Top administration must sponsor and encourage continuous improvement of quality, including wise use of teams that can work together effectively to improve systems and other processes, including group processes and organization and system change skills.
- Administration must learn the meaning of statistical thinking : how to speak with data and manage with facts; how to take the guesswork out of decision making; how to reduce variation and unnecessary complexity through the use of seven standard tools of data analysis and display (cause - and - effect diagram, flow chart, run or trend chart, and control chart); and how to link the results of the use of these tools with appropriate management action.

TQM demands that change be based on the needs of the customer, not the values of the provider. It requires meaningful participation of all personnel and a rapid and thoughtful response from top management to suggestions made by participating personnel down the line. Management is no longer able to stifle the suggestions of personnel by requiring additional study or by requiring that all decisions be reviewed by a higher level of management.

TQM is more than a change in values and responsiveness by top management. It requires rigorous process flow and statistical analysis, evaluation of all ongoing activities, and the recognition and application of underlying psycho-social principles affecting individuals and groups within an organization. It requires accepting the fundamental assumption that most problems encountered in a higher education organization are the result of not errors by administrative staff or teachers, but the inability of the structure — within which all personnel function — to perform adequately.

An obvious conflict is between the relentless inquiry of TQM and the established norms of professional autonomy. This is not merely a conflict between administrators and teachers : it is a fundamental challenge to the way all professionals think about quality, evaluate and regulate themselves, and gain and protect their professional domains and autonomy. TQM does not respect existing professional standards; it is continually demanding new ones.

TQM places primary emphasis for problem characterization on the system rather than the individual. Deming estimates that 85% of errors introduced into a process are the result of problems with the system rather than the type of random errors and mistakes introduced by individuals. This runs counter to the prevailing assumption in teaching institutions that a problem is a result of one individual's error rather than of the larger structure or system within which the individual functions.

Finally, TQM challenges the prevailing model of who the customer is. The customer in TQM is not only the student, but also the many users of an institution's output — the industry, etc. Here again, the criterion is not whether or not the work meets professional standards, but whether the user, often a member of a different profession, is satisfied with its timeliness and utility.

The reality is that both models — TQM and the professional bureaucracy — must be accommodated if TQM is to make a difference in higher education institutions. For example, Galbraith outlines the importance of the professional model in handling the flood of specialised information that education has developed. He suggests that specialization is a way of handling information overload, especially in the absence of other information-processing alternatives such as a common management information system or lateral linkages for information coordination. In fact, one can see TQM as a methodology for developing lateral linkages in the higher education institutions that transfer information between disciplines as and when needed. It is a powerful method of lateral information transfer in the traditionally highly compartmentalized organization.

Conflicts between the Professional Model & the TQM

The nature of the organizational change required to implement TQM can be outlined by contrasting the two models and evaluating points of conflict (see Figure 1). While they are not mutually exclusive and while the observed points of conflict will vary between organizations, each of the models requires explicit recognition.

Individual versus collective responsibility

The professional model places the responsibility for performance squarely on the individual professional. As described by Mintzberg, "the Professional Bureaucracy.... hires duly trained and indoctrinated specialists — professionals — and then gives them control over their own work." He goes on

Professional		TQM
Individual responsibilities		Collective responsibilities
Professional leadership		Managerial leadership
Administrative authority		Accountability
Professional authority		Participation
Goal expectations	Versus	Performance and process expectations
Rigid planning		Flexible planning
Response to complaints		Benchmarking
Retrospective performance appraisal		Concurrent performance appraisal
Quality assurance		Kaizen

FIGURE 1: AREAS OF CONFLICT BETWEEN TWO ORGANIZATIONAL MODELS — PROFESSIONAL AND TQM

to state that such control means that the professional works independently of colleagues but closely with students. If the professional makes a mistake, then that professional is primarily liable for damages. If the error is blatant, a QA committee, and the professional society in the very worst cases, sanctions the individual. Only in the most grievous cases is the organization itself at risk for damages.

The TQM model focuses on the system. If errors or problems occur (e.g., if individuals were not properly selected or trained, key information was not transferred, or procedures were not adequate to the variety of possible situations), the TQM model focuses on the process, not the individual provider. To correct problems and errors, a group — usually interdisciplinary — of individuals in the organization is asked to assume ownership of each process and joint responsibility for its improvement.

Teaching versus administrative leadership

In an higher education organization, a continuing source of conflict is the relationship between the various levels of administrative management and the professional leadership. At a time when the management is trying to gain more control over the teaching in the face of pressures for efficiency purposes, TQM comes along and demands that management take a more participative approach. Administrators are required to involve teachers in the decision-making process, leaving it up to them to solve quality problems as they arise. Yet, while this is a participative program, it is clearly an administrative initiative. Paradoxically, participation may be perceived as a threat to administrative autonomy while at the same time contributing to individual and group autonomy.

Autonomy versus accountability

Autonomy is central to teaching in professional model. Under this model, teachers have the special privilege of freedom from the control of outsiders. This privilege is justified by three claims :

1. Unusual degrees of skill and knowledge are involved in teaching work, and administrative professionals are not equipped to evaluate or regulate it.
2. Teachers themselves may be trusted to work conscientiously without supervision.
3. Teachers themselves may be trusted to undertake the proper regulatory action on those rare occasions where an individual does not perform work competently or ethically.

Teachers are thus suspicious of administrative actions in the areas of control and QA, and TQM may look like another in a progression of management steps designed to reduce their professional autonomy. TQM is a technique that is likely to increase personal autonomy in undertaking task-oriented change. It does not, however, respect professional autonomy as much as it respects personal autonomy. At the same time, it demands that teachers hold themselves accountable for both outcome and process performance on a continuous basis.

Administrative authority versus participation

TQM, through the use of quality circles, puts responsibility for quality control in the province of the frontline administrators and employees. Quality circles are small groups of employees from the same area who work on a range of problems to increase productivity and efficiency. Maintaining quality no longer means taking names and booting bottoms; it means monitoring and teaching employers to monitor their own performance and taking corrective action.

Professional authority versus participation

The TQM approach diffuses responsibility for quality among the members of the team responsible for the delivery of education. The criteria are not necessary those selected by teachers and other professional groups. TQM emphasizes that criteria are selected by the users of the output. It was best described by the director of a major teaching institution, who defined his objective in starting a TQM program as wanting to "make this a customer-driven instead of a teacher-dominated institution." Teams are likely to be multidisciplinary, and the creativity and worth of every team member must be respected equally. This has been reported frequently as a perceived threat to the status of teachers. The same is quite likely to be the case with high-status administrators.

Goal versus process and performance expectations

The usual expectation in higher education is that one has an objective goal for every act; that there is a "gold standard" for education. This means that each activity has a protocol for behaviour and an expected outcome, and that the protocol remains in effect until someone, often very late, feels and makes it appear obsolete. That is not the case with TQM. The objective for TQM is one of continuous improvement. While this is not totally foreign to higher education (e.g., the history of development of specialised education e.g., Micro-biology from Biology, etc. has been one of continuous improvement), the institution does not measure the success ratios of many of its basic procedures, such as getting the placements for its students more quickly or the fitness of the student vis-a-vis the environmental requirements etc.

Rigid versus flexible planning

A major teaching institution tried forming quality circles and, like many other organisations, developed a series of major efficiency enhancing proposals. As might be expected, these proposals often had associated capital requirements and the institution had already planned its capital investments for three or more years. The proposals were not implemented quickly, and the quality circles lost interest.

TQM requires that management be responsive to quality improvement suggestions. New priorities are necessary, and they must be addressed aggressively through flexible, ongoing planning rather than through rigid, preprogrammed activities.

TQM includes a concept called benchmarking of services and processes. This involves comparing current activities and performance against the best of the competition, the idea being to develop a service and process that significantly betters the competition. This implies several changes to existing approaches in higher education, where the primary stimulus for change is the recognition of a problem priority vis-a-vis the established norm. TQM explicitly acknowledges that there is a competition to be studied and surpassed. Second, it recognizes the customer's experience as the basis of comparison. Third, it expects that the institution and its processes should be improving all the time, regardless of whether or not a complaint is registered or a problem identified. It means that the accepted way of doing things does not last long. It requires continuous growth and learning on the part of everyone, no matter how old or how educated.

Retrospective versus concurrent performance appraisal system

Most performance appraisal systems are based on setting goals and then meeting them. TQM appraisals focus on gaining skills to contribute to the process of quality improvement. Therefore, the reward system is based on contribution to a team effort to improve outcomes rather than on whether specific set objectives have been met. If TQM is in effect, the objectives will be changing almost daily : as some are achieved, new ones are immediately set. This case illustrates the concept of TQM.

A European company won a contract to deliver headlamps to a Japanese car manufacturer. The initial contract allowed 50 defective lamps per 100,000. The lamp manufacturer modified its process to meet that standard painlessly. The next contract called for 20 defective lamps per 100,000. The lamp manufacturer managed to meet that too, so the next contract is called for 15 per 100,000. Once again, the supplier struggled and met the new requirement. The next contract called for 10 per 1,00,000. This time the lamp manufacturer complained. "Why didn't you ask for that standard the first time?" We didn't know what you could do, when we started," the Japanese replied.

The concept of "Kaizen" or "continuous improvement," is what drives a TQM program. No matter how well one does, one should be preparing and attempting to do better.

Quality assurance versus continuous improvement

The underlying premise of QA has been to identify human errors in the process, to follow established protocols, and to search for failures to meet the gold standard. This is the traditional approach: Either the standard is met or it is not met. TQM emphasizes system errors and the continuous nature of improvement. Moreover, it requires that improvement be the responsibility of all personnel, not just those who are specifically assigned the duties to control and monitor.

(To be concluded)

Vocationalisation — The Bombay Experience

Indu Shahani*

The colleges of the Bombay University have taken a lead role in the implementation of the UGC Scheme of Vocationalisation at the first degree level which was introduced in 1994. There has been tremendous enthusiasm on the part of the colleges staff and students in the introduction of the programme in Bombay.

In the first phase of Vocationalisation, eight colleges were selected from the arts, commerce and science streams. These were the Ruparel College, Narsee Monjee College of Commerce, Podar College of Commerce, K.C. College of Arts, Science and Commerce, H.R. College of Commerce, Jai Hind College of Arts, Science and Commerce, Vaze College and Birla College. In the second phase seven more colleges have been selected to teach vocational courses from the academic year 1995.

From the 35 vocational subjects, Industrial Chemistry and Biotechnology have been a popular choice in the science stream, Computer applications and Tourism & Travel Management in he commerce stream and communicative English in the arts stream. From the very inception of the course in the University individual colleges took initiative in organizing subject wise meetings to discuss the concept, methodology and implementation of the UGC programme. This exercise brought about clarity and uniformity in the implementation of the vocational subjects. Regular review meetings have helped to follow up the courses by providing feedback for improvement.

The success of vocational education programme would depend on the placement of vocational students in jobs, especially self-employment. 1997 therefore is an important year when the first batch of vocational students will determine the future of this programme. The Bombay colleges are thus geared to realize the vision of the New Education Policy 1986 through the effective implementation of vocationalisation.

Issues in Implementation

The implementation of vocationalisation at the undergraduate level has however not been free of problems. The Bombay experience has shown that despite the initial optimism and enthusiasm there is a growing apprehension of the sustainability of the courses in the future.

The first issue is of *Relevance*. There is extensive debate on the direction and content of higher education to cope with the increasing demand of social relevance and employment. In a fast moving global economy the accelerated pace of change demands corresponding changes in academic curriculum. The vocational courses have a greater responsibility since they have to cope with the frequent structural and technological changes. Curriculum in some subjects such as Instrumentation, Computer applications or Manufacturing process will be thrown redundant faster than other subjects if not updated regularly. It is also important to clarify at this stage how these vocational courses compare and compete with professional courses. For instance how would the vocational courses of the Science Faculty compare with technological degree courses of engineering colleges.

A second important issue is the *financial viability* of these courses after a period of five years when the UGC ceases the funding of the courses. The worry of the Bombay colleges is that in the event of the state government not supporting these courses financially, the colleges will face a real crunch and be forced to raise funds privately since it may not be possible to charge differential fees which cover the cost of vocationalisation. At present the UGC has estimated an expenditure of over 110 crore rupees to fund the courses for a four year span.

The most important issue is the *administration* of these courses. Although the vocational curriculum is integrated with the existing core curriculum, the courses require special effort on part of the college administration. Vocationalisation requires the combining of more innovative components with the conventional courses to meet the growing new demands. The coordination of guest faculty, evaluation of practical and project work, organization of field visits & liaisons with industry for on-the-job training and placements has increased the admin-

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istrative burden of colleges. The common experience of Bombay colleges has shown that the Principals or the Vice-Principals have been pressurized with the additional work leaving them with no time for other academic and administrative work. The need for full-time faculty or a Co-ordinator for each subject has been strongly felt and conveyed to the UGC.

At the heart of any academic programme is the *Faculty*. An apathetic or an indifferent faculty is a major snag in any educational course. In Bombay there was a very enthusiastic response from the faculty. The commitment of the teachers especially of senior teachers in all subjects has been overwhelming. However there is skepticism on how long this enthusiasm will last since the internal faculty of the colleges take up the vocational subjects as extra work in addition to their normal workload. As a result, teaching quality suffers and the very purpose defeated.

Moreover the new professional courses require that the staff should be properly trained and qualified. Upgrading of knowledge and pedagogical skills for teachers is essential. The training workshops planned by the UGC are insufficient and irregular to cope with the training needs. Each college in Bombay has made special effort in providing additional training to the teachers by sending them to professional seminars, conferences and encouraging constant interaction with industry.

A key component of vocationalisation is *on-the-job-training* imparted to students by employing establishments during summer vacations. The Bombay colleges have successfully placed their students in different organizations but it has been an uphill task. Persistent appeals and constant liaison with industry has seen the first year through. But with the addition of a second year and a third year the problems of finding placements for students are bound to surmount even in a city like Bombay which is the commercial capital of India.

The *selection* of students for the courses is of great importance. Prior to the selection process, there should be vocational counselling given to students to help them make the correct selection of the subject. Many colleges in Bombay were helped by industry in the selection of students. The courses have been very popular and therefore were oversubscribed. A margin of two to three students in each subject has been maintained to overcome the problem of dropouts during the year.

Although the implementation of the scheme of vocationalisation is in a state of infancy, appropriate attention to some of the issues raised above will help overcome the teething problems and give direction to the programme.

The feedback at the review meetings held in Bombay has shown that the UGC scheme of vocational courses is indeed a step in the right direction and must be introduced with right type of dynamism. It promises efficient social gains and better prospects provided there is proper governance of institutions, proper availability of infrastructural facilities, trained and qualified faculty, financial support, flexibility in institutional operation, academia-industry interaction and management support.

It is quite apparent that the UGC, the universities and the colleges all over India are determined to make a success of these vocational courses by making the scheme socially relevant and by providing additional job opportunities to the fresh graduates.

UNIVERSITY NEWS

A Weekly Journal of Higher Education

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Eight Sins, Seven Wounds and Gaia

Kailash Tuli*

Austrian ethologist and Nobel laureate Konrad Lorenz (1973) gives a very precise account of eight deadly sins of mankind in his thought provoking book, *Civilised Man's Eight Deadly Sins*. To put them on record, these eight deadly sins of mankind are : 1. Overpopulation, 2. Devastation of Environment, 3. Man's Race against Himself, 4. Entropy of feeling, 5. Genetic Decay, 6. Breakdown with Tradition, 7. Indoctrinability, and 8. Nuclear Weapon Proliferation.

Canadian ecologist James George, former High Commissioner to India in his book *Asking for the Earth* writes about seven wounds which mankind his inflicted upon Mother Earth. These are : 1. Industrial and Nuclear Pollution, 2 Erosion and Desertification, 3. Rainforest Destruction, 4. Loss of Biodiversity, 5. Ozone Depletion, 6. Global Warming, and 7. Population Explosion.

British ecologist and philosopher James Lovelock reminds and propounds the ancient Greek hypothesis of Gaia. The Mother Earth (Gaia) is a living organism which has a life. She is vibrating, pulsating and has good and bad phases of health, as in the case of any living organism. As per this concept Earth is an living object and is therefore Biotic. Lovelock explains that many of the functions of earth are self regulatory like climate, temperature, atmosphere's composition and so on. That shows the organism like character of the earth.

Gaia is the legendary Greek concept of Mother Earth in which it was thought that the Earth is a planet with life and which gives rise to various kinds of living organisms. Chronologically, the concept of *Dharti Mata* or *Janani* is found in ancient Indian scriptures at an much earlier date. Indian philosophy gives a very high degree of esteem and honour to Mother Earth. Even in the modern times with many changing and deteriorating values, still Mother Earth is worshipped. It is a well known fact that in India, a majority of people do *Bhoomi Poojan* before making any house, factory or industry on any plot of land. The soil itself is an object of worship and as a token of respect, people put it on their forehead or vow by that.

The present scenario emerged because of the Industrial Revolution which had its birth in Europe but spread over to most of the nooks and corners of the Earth. Right from the beginning it had developed acceleration. Presently in its top gear form, it is heading for more speed. Though speed is thrilling and exciting it has its own fall outs. It is indeed a very unique phenomena that the eight sins and seven wounds are basically the bad creation of mankind and that too at this particular juncture of time. In one sense this kind of race of humanity appears to be blind, purposeless and self destructive.

For a moment let us ponder over the whole process. On the eternal clock at some point of time the Mother Earth, Gaia, was born. It took millions of years before the living organism appeared on the Virgin Earth. Various species had a chronological order of birth. Ancient Hindu scriptures put the estimate of these species to an astounding figure of 8.4 million. Thus the Virgin Earth turned into the Mother Earth. Gaia's species include a wide range of living beings which may be grouped as plants and animals. These species include microbes, aquatic animals, insects, reptiles, birds and mammals. These were the innumerable children of Gaia. Human beings were just one kind of specie in the mammal kingdom but because of intellectual superiority, they produced various kinds of tools starting from sharp stones to kill animals for food during the stone age. Over a long period of time, through collective thinking process of mankind, these tools developed into more and more intricate technological equipment. Some of the typical examples are steam engines, cranes, cars, aeroplanes, power stations, spaceships, computers, telephones, information highways, etc. The list is endless yet adding more and more. A grand example of infinite greed!

Historically, the sins became more and more precipitated and intense during these periods of rapid development with the advent of ultra technological systems, which Alvin Toffler (1970) describes as 'Future Shock'. The sins and wounds mentioned in the beginning were more intense during these phases of the so called development of mankind. Gaia produced human beings but human beings produced many good and bad things with the available knowledge of science and technology. This production of human beings brought forth good children and bad children. Examples of the good children are telephones, medicines, computers, scientific instruments, etc. The bad and delinquent children are nuclear radiation, chemical hazards, pollution, drugs, artillery and warfare objects, nuclear missiles and other hazardous items. Let us call all of them as the 'grandchildren of Gaia'.

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If we examine closely, we shall find that human beings are the sufferers in case of sins as mentioned by Lorenz. On the other hand Gaia is the sufferer in case of wounds on her. Both are living beings and both are suffering. So the problems for human beings become multiplied in the sense that they have to survive with their own sins and to live on a place which is wounded. It seems like a vicious circle situation.

To the old mother (without reference time!), this kind of ill treatment by her own species (human race) and her delinquent grandchildren is a cruel joke. In this process of ultra and hyper industrialisation, Mother Earth is becoming the target of all sorts of illnesses and casualities. The wisdom of thinkers like Lorenz, George and Lovelock is explicited in various fears. In his book *5000 More Days for Mankind* published in 1990, James Goldsmith gives alarm and a serious warning to mankind. He refers to the blunders done by humans to the rivers, forests, mountains, air, soil, seas, etc resulting in irresponsible and irreversible acts like pollution and the depletion of the ozone layer. These are the sins and wounds committed by greedy and power hungry man in maligning Mother Earth.

If we do not undo our eight sins and heal the seven wounds of Gaia, then it should be clear that our survival is not going to last longer. The fate would be like those parasites who kill an organism and in the process get buried or burnt with the cremation of the organism.

Gaia never treated her children as parasites but we, the human beings have earned the dubious reputation of being parasites to her. The human beings' desire to know and explore the universe and its infinite mysteries make a sense, but to toy and abuse the resources within the earth are like invasions of privacy. Especially testing nuclear bombs and thereby polluting sea, land and air makes no logical meaning. More so, out of greed, fear, politics and insecurity we create wars, weapons, chemical and nuclear hazards just to protect ourselves geographically but to kill ourselves globally.

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CALENDAR OF EVENTS

Proposed Dates of the Event	Title	Objective	Name of the Organising Department	Name of the Organising Secretary/ Officer to be contacted
Nov. 26-Dec 1, 1996	IAEWP Eighth World Congress to be held at Zagreb, Croatia	To promote International Peace	International Association of Educators for World Peace (IAEWP)	Dr. Nenad Javornik, IAFWP, Ulica Crvenog Kriza 14/1, Zagreb 100 00, Croatia OR Dr Surya Nath Prasad Reader, Janata College of Education, Post Box No. 113, Chandrapur - 442 401, Maharashtra
Jan. 29-31, 1997	16th Annual Convention and Conference on Access to Electronic Information	To focus on present changes, challenges. responsibilities and future probabilities in accessing electronic information	Society for Information Science, Bhubaneswar	Dr. P. Padhi C/o Department of Library & Information Science. Utkal University, Vani Vihar, Bhubaneswar-751 004
Feb. 7. 1997	10th Kharazmi International Festival	To accord recognition to scientists in the fields of science. agriculture engineering, basic sciences, medical and human sciences	Iranian Research Organisation for Science & Technology (IROST), Tehran	Dr M Molanejad IROST, No 71 Forsat St. Enghelab Ave. P.O. Box 15815-3538 Tehran 15819, Iran.
March 16-19, 1997	International Conference on Remote Sensing and GIS/GPS	Theme. GIS/GPS for Microlevel Planning	Jawaharlal Nehru Technological University, Hyderabad	Prof I V Muralikrishna, Programme Director, ICORG-97, Jawaharlal Nehru Technological University, Mahavir Marg, Hyderabad - 500 028

Why this Craze for English Medium?

S. Muthukumaran*

> *Among the many evils of foreign rule this blighting imposition of a foreign medium upon the youth of the country will be counted by history as one of the greatest. It has sapped the energy of the nation. It has shortened the lives of the pupils. It has estranged them from the masses. It has made education unnecessarily expensive. If this process is still persisted in, it bids fair to rob the nation of its soul.*
>
> (Mahatma Gandhi,
> *Young India*, 5th July 1928)

During the freedom struggle, it was realised that education ought to be through the language of the people. There was therefore a demand for the introduction of the Indian languages as medium of instruction in place of English. By the time we attained independence most of the students were studying through their mother tongue. After independence, states were reorganised as linguistic states. This in turn gave a fillip to the Indian languages as they were declared state official languages in 1957. English medium was sought after only by Anglo-Indians, children of those living in states other than their own due to various reasons, and those employed in union government and liable to be transferred to different parts of the country. Further, for the sake of the children of union government employees, Central Schools were established all over the country. In these schools English was the medium of instruction. In due course there was a demand for Hindi medium in these schools. This was the trend in the first twenty years after independence.

Reversal of the trend

In the last twenty to twentyfive years there is a reversal of the earlier trend. More and more students are demanding to study through English medium. We do not have readily the figures regarding the number of students pursuing school education in different media. But it is possible to get an approximate idea.

Taking Tamilnadu State as an example, we know the schools affiliated to the State Board offer the courses generally in Tamil medium. There may be one English medium section in some of the schools. But the number of students studying through English medium is not a very significant percentage of the total. There are Matriculation schools, Anglo-Indian schools and schools affiliated to the Central Board. In these schools the medium is English. Table 1 indicates the trend in the medium of instruction.

Table 1: Medium of Instruction in Tamilnadu

Year	*Percentage of Students in high and higher secondary schools*		*Remarks*
	State Board	*Matric, Anglo-Indian & Central Board*	
80-81	92.2	7.8	
90-91	87.6	12.4	
94-95	85.0	15.0	

If this trend continues for another 15 years, most of the students in schools will be studying through the English medium or in other words the situation would be as it was in 1930.

Why this trend?

There are several reasons for the disillusionment of the people who were demanding the right to study through their mother tongue. Some of the more important reasons are the following:

1. All professional colleges offer their courses only through English medium. For reasons known only to those in authority, even course in agriculture and Indian medicine are offered in English medium! Those that have studied through the state language are at a disadvantage in pursuing these courses.

2. Central institute of higher education and colleges run by the Army, etc offer their courses in English. Even to get admission in these institutions one has to write the entrance examination in English. (There is demand for conducting the entrance examinations in state languages.)

3. All the all India professional bodies conduct their programmes, publish their journals, etc only in

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English. Even though there are moves to introduce Hindi as an alternative, those that have pursued school education through the state language appear to be at a disadvantage.

4. English version of the laws alone is authentic. Even if the statutes are available in the state language, they are not accepted as laws in the high courts and Supreme Court of the country. Therefore, there is no use in reading the law course in any medium other than English.

5. Except for IAS, the examinations for recruitment to central services, employment in central organisations and the nationalised banks are all in English or Hindi. Those that have studied in English medium enjoy an advantage.

6. Large companies and multinationals conduct their office administration in English.

7. State governments also prescribe even today minimum marks in English for joining the state service.

8. Studying through the State language in the school puts an additional burden on the student as he has to learn the technical terms in English in later life.

For all these and many more reasons the parents wish to put their children in English medium schools from the first standard itself or even in lower kindergarten class!

What is to be done?

As expressed by the father of the nation, the medium of instruction in our educational institutions has to be our languages only. In the interest of our country and our children and to preserve our culture, the medium of instruction has to be changed as early as possible. In order to change over to Indian languages, it is necessary to make it possible to pursue higher education especially professional education through our languages. Central institutes like IITs must provide for instruction in the languages of the region in addition to Hindi and English. Immediate steps must be taken to conduct the entrance tests to these institutions in the state languages also. All the all India professional bodies must publish their journals and conduct their proceedings in all the state languages in addition to English. The Constitution of India has to be amended to make all state languages, the languages of the laws of our country. All competitive examinations of the union government, central undertakings and nationalised banks, etc must be conducted in all the state languages. State governments must prescribe for the state government posts minimum marks or proficiency in the state language and not insist on minimum marks/proficiency in English. Mahatma Gandhi has pointed out that by studying through English medium the precious time of the pupils is wasted and education has become costly. In other words, if our children study through our languages, it should be possible to complete the course in lesser number of years. Therefore an alternative programme of study through the Indian languages is to be introduced which will provide for qualifying in SSLC in 8 years, higher secondary course in 10 years and degree course in 13 years. A study of the curriculum of the secondary and higher secondary schools would indicate that the child spends approximately two years for learning English language. By not making English compulsory for the children who study through Indian languages, the 10+2+3 pattern can be shortened to 8+2+3. Unless we deliberately introduce an advantage in studying through the medium of the state language, the parents would continue to prefer English medium and ultimately as feared by the father of the Nation, sooner or later, the soul of the Nation will be robbed by the foreign medium in our educational institutions.

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THE CREATIVE LIFE

U.S. Chaudhari*

There are very few authors and speakers in whose writings and speeches one is feasted with a beautiful blending of religion and science, East and West, and tradition and modernity. Late S. Radhakrishnan is one of them. The more you read his books, the more unread you become. Since he was an educator, *par excellence*, it is highly rewarding for a teacher to read his work intensively and comprehensively.

His book, *The Creative Life*, though first published in 1975, is very much relevant and illuminating even today, in the time of moral inertia and spiritual vacuum. In this book, Radhakrishnan is seen almost distressed at the sight of divisive, destructive and degenerative activities in which the human beings are involved. They have reduced the society to a "disorganised dust of individuals". Growing brutalization, vulgarization and robotization of men constrained him to say that, "man has ceased to be a creative person". But, even this saddening scenario does not diminish his faith in man's creative potential. In the chapter on 'Growing Interdependence' his eulogy for men is worth noticing: "What man has achieved so far is immense, yet it is very small compared to what he may yet achieve. History has many surprises in store for us."

This book is divided into two sections : 'The Enlightened Perspective' and 'Internationalism'. Section one deals mostly with education in its various ramifications, and two with the issues of quest for peace, international understanding, the fulfilment of man and the promise of the future.

Radhakrishnan through his persuasive pen, urges mankind to achieve completeness of being through rigourous discipline of mind and chastity of spirit for the purpose of producing a better creative life in which every man will have more amplitude of existence, more richness of being and more fervour of friendship.

As regards the purpose of education, he insists that the kind of education that is imparted must not only be broad but should also be deep. The education should give not merely smattering of learning and skills but endow an individual with a definite purpose in life, defined by himself or herself. In agreement with our great tradition, he advocates the study of our great classics and communion with great minds. To rise above the level of human animal it is essential for every human being to develop the quality of considerateness, kindness and compassion.

We must set ourselves the straight goal of commitment to knowledge and advancement of learning by making our contributions to the great adventures which are taking place in this world. Our knowledge must equip us with the power to overcome spiritual stagnation and foster spiritual sensitivity. Education worth its name, must free us from all prejudices and presuppositions and look upon all as kith and kin. A truly liberating education is a second birth, a renewal.

Radhakrishnan asserts that man as a logical being is not a final end in human evolution. His logical mind has to grow into spiritual to fill up the 'inner vacuum' created by our undue emphasis on materialism and sciencism reducing human beings to 'creatures of comfort'. We are, therefore, called upon to use all the resources available to us for the purpose of perfecting ourselves. An objective study of scientific truth means an intellectual excellence, moral excellence and emotional commitment.

Science and religion 'represent two dimensions to the human being: the rational and spiritual. If a human being is to become real human, science and religion must be integrated. On deeper scrutiny, we may realise that science and technology, if they establish anything, establish the omnipotence of the human spirit and not the omnipotence of the matter.

While elucidating the concept of an 'Ideal University', Radhakrishnan propounds that the university is the sanctuary of the intellectual life of the country. When we impart education we start a ferment of debate and discussion of first principles. The educated youth will voice their thoughts and find fault with things as they are. We train in the universities not only doctors and engineers but also men and women who think for themselves. They will not judge everything by the party line. If we destroy the initiative, the freedom of the people, we do so at our peril. If men lose intellectual vigour, the future of civilization is bleak indeed. The students of university should be trained to struggle against

(Contd. on Page 14)

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The Tradition of India

Dr. (Mrs) Najma Heptulla, the then Deputy Chairman, Rajya Sabha, delivered the Convocation Address at the annual convocation of the Dr Bhimrao Ambedkar University, Agra. He said, "As an educated member of society each of us must develop a commitment to do something to improve the world. This is the tradition of India. This has been the strength of India. The thoughts and the philosophies that India has gifted the human race throughout its history, will continue to enrich the world." Excerpts

We have formulated our own system of education after giving deep thought to our ancient values of tolerance and also keeping the future requirements of the society. But education in our country still leaves much to be desired. We have to make it more society-oriented. If India has to rapidly develop and reach new heights, we must set higher standards in education and lofty ideals in life.

There should be greater interaction between Industry and academia. 'The university should be a tributary to a larger society not a sanctuary from it.' While industry should utilise the research work conducted at universities, the academia should also prepare itself to meet the demands of industry. The industry should realise its responsibility toward higher education. Our entire programme of social development relies on the findings of research institutions and the universities. No country has made progress without consolidating higher education.

We have to rise and compete with other educational and research institutions in the world. The foremost task before us, therefore, is to achieve excellence. There is a need that education responds to the demands of society. It should anticipate the trends and also set the direction for a future society.

If Knowledge is Power then it has been rendered to those who have mastered modern technologies. The new technological revolution has truly democratised the society. The power has been delivered at the Table-tops through micro-chips. We have to see that our educational institutions turn to newer areas and prepare the youths to adapt it.

I see two major challenges lying ahead of us. First, we must recognize that an increasingly sophisticated technology has pervaded us in our daily life. A totally new education and training will be required to cope with it. Our task is to build a scientific temper, to impart the technical and scientific skills needed to cope with newer developments.

Secondly, and perhaps more important is, how, as human beings, we deal with the technology? Are we going to control it or is science and technology going to control us? It is essential that we marry that scientific temper with a system of humane values which will help us channelise the scientific endeavour into constructive and peaceful areas. Our scientific temper should be combined with rich cultural traditions. Our heritage have always emphasized on *Tyaga* and *Seva*.

As an educated member of society each of us must develop a commitment to do something to improve the world. This is the tradition of India. This has been the strength of India. The thoughts and the philosophies that India has gifted the human race throughout its history, will continue to enrich the world.

One of the most illustrious educationists of modern India, Maulana Abul Kalam Azad, who fashioned our education system, used to say and I quote:

"Knowledge is above all limitations and boundaries. Whatever be the region of the globe where it first emerged, it is the common heritage of all mankind. All human beings, regardless of country or nationality, can lay claim to it with equal right."

I am fortunate to have inherited his legacy. Maulana as we know him, was rare combination of magnanimous Indian values and western liberal thoughts.

It is only by preserving our values in institutions of higher learning that we will be able to produce truly educated people. One such valued tradition is the *Gurushishya Parampara* of our *Gurukuls*. I can tell you by my experience both as a student as well as a teacher, it is one of the most wonderful relationship in the society.

We are in land of one of the greatest teachers of all times, Krishna. He elaborated the profound philosophy of Gita to Arjun in most testing times and in a strange surrounding. This is also the land of teachers like Fatahullah Shirazi and Mir Kalan, the famous tutor of Jahangir. A teacher is always beside his pupil to show him the right path. Young friends, I will call upon you to maintain this compassionate relationship.

Our fundamental aim should be to supplement quantum increase in education by parallel improvements in its quality. Our experience shows that there is a difference between being educated and being literate. We have thousands, perhaps millions, of people in the country who are not literate but highly educated in the deeper sense of the word. Conversely, we have many people who are educated in formal sense, but are not really educated in the deeper sense. It is the quality of mind that distinguishes an educated person from a literate.

An area which requires special emphasis is the education of girls. Even at this fag end of the twentieth century and almost fifty years after independence, women are discriminated against. They still are not able to get the place in our society that they deserve by their own right. The education of girls, unfortunately, although we have done a lot, is not taking off as it should. Enrolments, no doubt, have increased; but there is also a corresponding increase in the drop-out rate. Much needs to be done to keep our girls in schools. Even more to get them into institutions of higher learning. We must launch a vigorous campaign to stir the consciousness of our people against this trend. The task of imparting education to women cannot be accomplished by the Government alone. Entire society, specially the institutions like yours will have to work in this direction. Every effort has to be made towards the employment of women who constitute nearly half of India's population. To enable them to participate fully in the process of nation-building.

A university is a community of students, teachers, specialists and research scholars who are engaged in the pursuit of knowledge at the highest level. It may primarily concern itself with higher learning, but the fruits of its intellectual labour must have an impact on individual and social life. A university certainly has an obligation to society. It has to build a society of refined men and women who believe in the process of a civilized and democratic life.

Teachers and students belonging to universities should look upon their intellectual work as the extension and expression of their whole being. The major task of our education is, therefore, to stress this creative aspect of university life. It is from universities that the higher values flow, and they are and should always be the source of idealism. We must continue to think creatively beyond the confines of narrow considerations. Benjamin Disraeli once aptly commented on the role of universities - *"University should be a place of light, of liberty and of learning"*.

Problems and challenges confront all nations. It is the struggle to overcome them united by that fosters permanent bonds, that create nations out of a conglomerate of seemingly diverse races and peoples. I, therefore, call upon you, who represent the intellectuals of our society to help forge unity and understanding in our society to transform our shared experience into a strong feeling of nationhood. Education should instil in ourselves respect for ideals of secularism, democracy.

THE CREATIVE LIFE

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ignorance, injustice, oppression and fear. It is the function of a teacher not to give pupils what they want but make them want what he gives them.

Human beings today are divided, riven and discordant personalities. Unless they are able to overcome evil and integrate their own nature, they will not be able to have any kind of insight into fundamental reality. In other words, the inward and the outward must cohere and must go together. It is ony then that we can call ourselves human beings, fulfilled human beings, not merely incomplete human beings as we happen to be. For this integration to take place, a symbiosis of time-tested traditional values and modern knowledge is necessary. The ideas and ideals may be the same but skills and techniques have been changing from age to age. We must reckon with this modern challenge.

In section two of the book, Radhakrishnan appears to feel deeply concerned about removing the roots of evil, and the forces which are destroying the good that we have. He reproduces the statement of one of the characters created by the Roman playwright Terence in which he said: "I am a human being, so there is nothing human that is not my concern." The author defines 'peace' as the harmonising of men in their differences; it is giving battle to distrust and prejudice. Thus viewed, peace, international understanding and human reconciliation are synonymous, since the use of force and coercion in settling differences and conflicts is not only bad morals but is bad policy as well. The intense nationalism of today has to give place to a true internationalism. A new man has to be created who feals for humanity as a whole. This change in man requires inward change.

"In a university", Radhakrishnan emphasises, "it is given to us to learn from one another, learn about one another, about other people's beliefs, about other people's practices, bring about an understanding of one another. All the religions, all the cultures, all the civilizations will come together one day. And this gives us an opportunity to see that though there may not be uniformity, there may be harmony, there may be unity, there may be recognition that all are parties in the one supreme task of nourishing the spiritual life of mankind and not rivals for power, for domination." We must, therefore, try to understand and appreciate each other, and recognise them as good or as bad as ourselves. That is what all academics and universities stand for. A kind of intellectual cooperation and solidarity is also essential for stabilizing the new emerging world which has been created by the contributions of people of all countries, creeds and complexions.

Performance Indicators in Distance Education

The Distance Education Council, Indira Gandhi National Open University recently organised a National Seminar on Performance Indicators in Distance Education. The objectives of the Seminar were (a) to appreciate the importance and role of Performance Indicators in Distance Education; (b) to provide opportunity to reflect on the approaches, practices and issues in the development and use of Performance Indicators in Distance Education; and (c) to develop examples of Performance Indicators in key areas of academic programmes in distance education.

Inaugurating the Seminar, Prof. G. Dhanarajan, President, Commonwealth of Learning, Vancouver, Canada commended IGNOU's efforts of 'introspection of what was and where it should go'. Emphasising the importance of public accountability of distance education institutions, Prof. Dhanarajan felt that Performance Indicators would help in the measurement of efficiency and effectiveness of distance education system. He hoped this seminar would help frame new questions to seek greater clarity on a number of issues that distance educators were seeking answers for.

Prof. R.G. Takwale, Vice Chancellor, IGNOU and Chairman, Distance Education Council, in his presidential address, explained in detail the unique role of IGNOU as a system leader in distance education in India. He focused on the paradigm shift in education from formal institution based model to an integrated network model that gave the learner the initiative and autonomy to learn and the access to the learning resources. He welcomed this shift to learner centered and outcome based distance education systems which would help face the challenges of development. Elaborating on the changes taking place in the nature and role of distance education institutions, Prof. Takwale emphasised the important role of distance education institutions in the training of work force of different sectors and the need to develop small, need-based, relevant courses of modular nature with complete flexibility in delivery systems. While discussing the context of globalisation and international programmes in distance education, Prof. Takwale suggested the establishment of International Assessment and Accreditation Agency for maintaining the quality of courses/programmes marketed internationally. He felt that the Commonwealth of Learning should take initiative in this direction. Prof. Takwale hoped that the Seminar would help in the development of manuals for Quality Assurance and Accreditation for Open Universities in India.

During the plenary sessions and Group discussions the following suggestions/action proposals emerged:

1. It was felt that there was a need to arrive at convergence of views on defining and categorisation of performance indicators to enhance common understanding and application.

2. The context specificity in the development and application of performance indicators should be taken into account. The difficulties in the development of indicators which are uniformally applicable to all countries and institutions were mentioned. The need for contextualisation of international and national experience was also emphasised.

3. The mission/goals/objectives of the institution should be identified which could be used as parameters/benchmarks/reference points for the development of performance indicators for that institution.

4. The model adopted for Performance Indicators should be more analytical than quantitative.

5. The performance indicators may be more useful for system support purposes i.e. keeping the system to know the directions, than for system evaluation purposes i.e. assessing the results.

6. The learners point of view should be given due importance in developing the performance indicators.

7. The performance indicators should not result in mechanical standardisation of process which may kill the creativity and flexibility in the education system.

8. Appropriate organisational culture should be developed for the use of Performance Indicators.

9. The Institutional leadership and institutions' policies and

practices should contribute to the development of spirit of performance.

10. The institution should develop management information system to facilitate the application of performance indicators.

11. In view of the distinct nature of distance education, the performance indicators developed for education in general should be suitably adapted for distance education programmes.

12. The staff of the institution should be actively involved in the development and use of performance indicators.

13. The national agencies like National Assessment and Accreditation Council, All India Council for Technical Education and Distance Education Council should share their experiences and collaborate in the development of manuals performance indicators.

14. Action research on performance indicators in distance education should be encouraged to critically analyse the present practices of quality measures/ performance measures and to develop appropriate systems for this purpose.

Altogether 60 participants from Commonwealth of Learning, Vancouver, Canada, Bangladesh Open University, Sri Lanka Open University, Indira Gandhi National Open University, State Open Universities in India, Institutes of Correspondence Courses, National Assessment and Accreditation Council, All India Council for Technical Education, National Council for Teachers' Education, University Grants Commission and other experts in the field attended the two-day Seminar.

Computational Facilities for Scientific Research

The Department of Science and Technology (DST) plans to establish seven high performance computational facilities in the country during 1996-97, as part of an ambitious initiative undertaken, to improve computation facilities for scientific research. The project on 'Integration of Computation Facilities for Scientific Research' (ICOSER) was launched after Prof. N. Mukunda of the Indian Institute of Science presented a paper in February 1993 to the Department's Science and Engineering Research Council, pointing out that lack of sufficient computing power was affecting many areas of scientific research.

It is not economically feasible to provide high performance computers to every scientific institution which needs them. As these are expensive machines, there are also issues of maintenance. It should also be ensured they are fully utilised. For these reasons, the new project will establish national computation facilities at a few research institutions. However, these institutions will be required to make a substantial part of computer time available to 'outside' researchers. In addition, there are also plans to provide access to these computer resources over fast communication networks.

The new computation facilities have been divided into three levels. Level 1 will have supercomputers or equivalent capability. The Indian Institute of Science and the Centre for Development of Advanced Computing (C-DAC) are two places which already have powerful computers and might be upgraded to Level 1 centres. The establishment of level 1 centres has been deferred till the lower two levels have been completed.

Level 2 is an intermediate stage with less powerful computing facilities. IIT Kanpur, Physical Research Laboratory, Ahmedabad, University of Pune, IIT Delhi and the Central University at Hyderabad are among the places where Level 2 centres may be established.

Seven places have been identified for the entry level, Level 3 centres: Panjab University at Chandigarh, Cochin University of Science and Technology, the Institute of Mathematical Sciences at Madras, the Indian Association for Cultivation of Science at Jadavpur (West Bengal), IIT Bombay, IIT Guwahati, and the Indian Institute of Physics at Bhubaneswar. These centres are expected to have the computation facilities introduced before the end of the current financial year.

The Level 3 centres would have high performance servers connected by a network, with low end graphic workstations providing access. The same configuration would not be bought for all the centres. Rather, the precise machines to be bought would be decided taking into account the computational needs of a particular centre.

Level 2 centres will have the computing power for large problems which cannot be handled with Level 3 system. The Level 2 and 3 systems are likely to be software and hardware compatible so that code running on Level 3 can be transferred to a Level 2 system without modification.

High speed communication

networks are envisaged to provide links to the Level 2 and 3 centres. Establishing such networking of computers was extremely important so that computer resources can be shared and effectively utilised, said Prof. R. Narasimha, former Director of the National Aerospace Laboratories.

Centre for University-Industry Dialogue

Punjabi University, Patiala, plans to set up a centre for a meaningful university-industry dialogue. Initially, the proposed centre will cater to the needs of the industry dealing in biotechnology, computers, pharmaceuticals and business management. Its purview will be enlarged at a later stage.

The Department of Biotechnology will provide short-term courses and expert advice in the areas of industrial and environmental biotechnology. The Department of Computer Science and Engineering shall provide expertise in software development for scientific applications such as computer graphics, modelling and simulation, finite element analysis and artificial intelligence. Technical know-how to develop software for commercial applications will also be available in the department.

The Department of Pharmaceutical Sciences and Drug Research shall provide expert services in brochure/product profile, preclinical and clinical evaluation, bioequivalence studies, formulation and product development, pharmaceutical analysis and standardisation of the products. The department shall also provide short-term training programmes for scientific personnel and executives depending upon the requirements of pharmaceutical industry.

The Department of Business Management possesses expertise to provide consultancy on various aspects of management such as market surveys, product development, cost reduction, marketing and financial strategies and organisation development approaches. It can also assist the public and the private sector in the programmes of human resource development which has assumed a lot of importance in the wake of the globalisation of the Indian economy.

A New Type of Carbon

Physicists at the Indian Institute of Science in Bangalore are reported to have produced a new form of carbon that behaves like true metal — a discovery that may launch a burst of scientific activity in laboratories worldwide.

The new carbon type is "highly conducting, very stable, chemically inert and shows true metallicity at very low temperatures," says Dr S V Subramaniyam of the Department of Physics. Spectroscopic and electron microscope studies have shown that the carbon discovered is different from the other known forms of carbon such as graphite, diamond, fullerene and cyanopolynes.

Films of the metallic carbon were made by subjecting certain organic compounds to a process called pyrolysis. Films obtained at temperatures of 950 degrees (C) had a metallic lustre and were very highly conducting.

The conductivity increased 100 fold with the application of pressure, according to the report.

It was lighter than graphite and consisted 99.5 per cent of carbon atoms and the rest hydrogen, the report added.

The study was financed by the Department of Science and Technology. Besides Dr Subramanyam, the research team included M N Vijayashree, Ahmed Sayeed, Somnath Bhattacharya, V Meenakshi, V B Prasad, D Kanjilal, Sukant Tripati, Ashok Cholli, Mike Downey, Shiv Shankar, Sridhar Alva, and Richard Meyer.

Workshop on Image Processing and Analysis

Indian Group of International Society for Stereology (IGISS), in collaboration with Andhra University, proposes to organise a two-day Workshop on Image Processing and Analysis (WIPRA-96) at Visakhapatnam on 27-28 December 1996. The objective of the workshop is to exchange ideas and experiences between research workers, practitioners, and vendors in these wide ranging fields on the common theme of image processing and analysis. The Workshop will review the state of the art in image processing and analysis. There will be invited talks from national and international experts working in these fields. Special sessions will be arranged on Hardware and Instrumentation, Bio-Medical Applications, Material Science and NDT, Remote Sensing, and Security Imaging and Machine Vision.

State of the art exhibition in imaging and image processing, IMAGEX-96, is also proposed to be organised on the occasion. The scope of the IMAGEX-96 covers: Video cameras, Image scanners, Radiographic imaging systems, Ultrasonic imaging systems, Microscopes, Medical imaging systems, Security imaging systems, Security products, Computers, Image processors, Image Analysers, Software products, light tables and illuminators, and other hardware.

Further details may be obtained from C. Babu Rao, Convenor, Programme Committee, WIPRA-96/IMAGEX-96, DPEND-IGCAR, Department of Atomic Energy, Kalpakkam 603 102, Tamil Nadu.

Commercial Viability of Banks in India

The Department of Commerce of S.V. Govt. P.G. College, Lohaghat District, Pithoragarh (UP) proposes to organise a national seminar on 'Commercial Viability of Banks in India', in second week of October. The seminar will focus on different issues pertaining to viability of the banks.

The topics proposed to be discussed include (i) Banks in India before and after Nationalisation — Evolution of various type of banks and banking systems in different sectors such as Public, Private, Co-operative, Regional Rural Banks, Non-Government, etc; (ii) Banking systems — social, development, merchant, etc; (iii) Sectorial Issues — Effect of social, political, geographical and other factors on working & operations of different banks, in context to deposits, advances, recovery, Credit-Deposit Ratio, etc; and (iv) Commercial viability of Banks in today's context — Problem of profitability, socialisation v/s commercialisation global competition, transparency in banking and other government policies.

Further details can be had from Dr M.C. Pande, SV Govt. PG College, Lohaghat-262 524.

Einstein Gold Medal for Prof. C.N.R. Rao

Prof. C.N.R. Rao, President of the Jawaharlal Nehru Centre for Advanced Scientific Research, has been awarded the Einstein Gold Medal by UNESCO in recognition of his outstanding contribution to science.

Prof. Rao, who was conferred the Padma Shri in 1974 and the Padma Vibhushan in 1985 and whose main research interests are in the field of solid state chemistry, surface phenomena, spectroscopy and molecular structure, will receive a diploma and an Einstein medal. The medal was first minted in 1979 to mark the 100th anniversary of Einstein's birth.

Author of over 700 research papers and 30 books, Prof. Rao obtained his Ph.D. from Purdue and D.Sc. from Mysore. He has also received D.Sc. *Honoris Causa* from 20 universities both Indian and foreign. He is a Fellow of several prestigious science academies and the recipient of countless medals and awards.

Distinguished Publisher Award

The Indian Publishing Industry recently honoured Mr. Asoke K. Ghosh, Chairman and Managing Director, Prentice-Hall of India, with the "Most Distinguished Publisher" award. The award was presented to Mr. Ghosh by the Union Minister of External Affairs, Mr. I.K. Gujral in New Delhi.

The award, which is based on the recommendation of the Indian Publishing community itself, is indicative of the "peer group recognition and hence most objective and credible", according to Mr. Gujral. One of Mr. Ghosh's contributions referred to in the citation of the award was his "unique contribution in internationalising Indian publishing". The citation further added : "he is a person who imbibes both the highest values of Indian culture as well as a modern scientific approach....."

Other earlier awards conferred on Mr. Ghosh were "Outstanding Leadership" award by the International Publishers Association, Geneva, for his "commitment to the protection of creativity and freedom to publish", Gold Medal for "outstanding achievements" by the Federation of Indian Publishers, the Srish Kumar Kunda Award for "outstanding contribution to publishing", and a special *first-time* award given to him by the Delhi State Publishers and Booksellers Association.

High-value educational content and low cost are the two factors that have made Prentice-Hall of India's Eastern Economy Editions — the imprint well known to millions of university students — a huge runaway success. It publishes books in virtually all disciplines of learning — from physical to biological sciences, from management to computers, and from psychology to philosophy. With over 1000 titles to its credit, Prentice-Hall of India's books are recommended by premier institutes of higher education such as the IITs and IIMs. Besides reprinting standard textbooks at low cost for Indian students, Prentice-Hall of India runs a strong original publishing programme that encourages eminent Indian academics to author quality texts to meet the growing demand.

Visakha Institute Offers Professional Courses

In addition to the conventional B.Sc. (Maths, Physics, & Computers) and B.Sc.(Maths, Physics, & Electronics) courses, the Visakha Institute for Professional Studies, Visakhapatnam, affiliated to the Andhra University, Waltair offers professional courses in Computers & Informatics and Electronics & Communications. These courses have provision for multiple entry and exit, meaning that a student who joins Computers & Informatics stream may get B.C.A. at the end of VI Semester and B.P.S. (C&I) at the end of IX Semester. Similarly a student who joins Electronics & Communications stream may get B.S. (E&C) at the end of VI Semester and B.P.S. (E&C) at the end of IX Semester.

The students of B.P.S. (C&I) or B.P.S. (E&C) are eligible to appear for GATE to become eligible to study postgraduate courses. B.C.A. or B.S. (E&C) students are already eligible to study M.C.A. course.

Ranbaxy Awards

Dr. Avadesha Surolia, a professor at the Indian Institute of Science, Bangalore, has bagged the 1995 Ranbaxy award for outstanding work in basic medical research.

Dr. Surolia had improved our understanding of the structure and function of lectin proteins having strong medical value, according to a release from the Ranbaxy Science Foundation.

The award includes a citation, trophy and cash award of Rs. 50,000.

Dr. Sandeep Kumar Basu, Director, National Institute of Immunology was selected for the Ranbaxy award for applied medical sciences for his outstanding research on better drug delivery of antibiotics and chemotherapic drugs for the treatment of infective diseases and cancer.

Dr. Gullapalli N. Rao, Director, L.V. Prasad Eye Institute, (clinical research) and Dr. Ajay Kumar Bose and Dr. Maghar Singh Manhas, professors, Stevens Institute of Technology (both for pharmaceutical sciences) are other awardees.

ICORG - 97

The Jawaharlal Nehru Technological University, Hyderabad, proposes to organise an International Conference on Remote Sensing and GIS/GPS on March 16-19, 1997 at Hyderabad. The theme of ICORG - 97 is GIS/GPS for Microlevel Planning.

The topics proposed to be discussed at the conference include (i) GIS/GPS Technology and Applications, (ii) Applied Remote Sensing for Land Resources, (iii) Applied Remote Sensing for Water Resources, (iv) Applied Remote Sensing for Marine Resources, (v) Integrated Surveys for Sustainable Development, (vi) Digital Image Processing, and (vii) Issues of Standardization of Data and Data Formats, Business Geographics and Miscellaneous.

Further details can be had from Prof I. V. Muralikrishna, Programme Director, ICORG-97 Secretariat, Centre for Remote Sensing, Jawaharlal Nehru Technological University, Mahavir Marg, Hyderabad - 500 028 A.P., India.

New Vistas in Astronomy

Dr. B.G. Sidharth, Director, B.M. Birla Science Centre, Hyderabad recently delivered a Lecture on 'New Vistas in Astronomy' at the Dr. B.R. Ambedkar Open University.

Dr. Sidharth gave a lucid presentation of how scientific ideas changed over several centuries. From the original religious concept of God creating the Earth, there developed first a geo-centric concept of the universe. Then came Galileo and Koetpler who proved that Universe is helio-centric (sun centred) universe. Then came Edward Hubble who established the fact that the solar system was only a small spec in the Andromada galaxy spec in the Universe, where billions of such galaxies were floating.

Dr. Sidharth said that man's interest in Astronomy started with his agricultural needs of finding the season and predicting the weather. The story of Science started from agriculture and led to the modern discoveries of astronomy, he added.

Whether it is Archimedies or Galileo or Newton or Hubble, all of them strived to discover truth and to understand the way universe was structured and in the process some of them were punished for their new ideas which were contradictory to the prevailing notions of the universe, he said.

Dr. Sidharth concluded by saying that man must be humble before the universe which was limitless and which probably consisted of several stars with intelligent life in them.

News from Agricultural Universities

New Crop Varieties

The Jawaharlal Nehru Krishi Vishwa Vidyalaya (JNKVV) Jabalpur, has developed a new rice variety — Jawahar Rice 353 (JR 353), an early maturing (105-120 days), 120 cm tall. JR 353 is a widely adapted variety averaging 33.8 q/ha. yield on farmers' fields under a wide range of growing conditions from unfavourable ecologies of rainfed uplands of the rice zone to rainfed shallow-lands in Rice-Wheat zone under limited water and nutrient input conditions. It tolerates weeds and keeps them down after one weeding.

This variety is of low requirements of fertilizers and chemical protection, superior 'bhat' and 'lai' making characters are added features. JR 353 is expected to enhance sustainability, productivity and profitability of rice cultivation.

The university has also developed a new hybrid variety of Bajra — Jawahar Bajra Hybrid-1 (JBH-1), a medium maturing (80-85 days), 150-200 cms tall.

JBH-1 is a downy mildew resistant hybrid having average yield of 20-26 q/ha. It has given good performance under low fertility, rainfed as well as high fertility, irrigated conditions at Gwalior, Bhind and Morena districts of Madhya Pradesh.

It has given 11% higher yield than MH 169 (Pusa-23) and 5% more yield than MH-179, which are the most popular hybrid under cultivation. JBH-1 has non-bristted long panicles and medium bolds globular seeds. It has 10% protein accompanied with good grains and chapati making quality.

News from UGC

Countrywide Classroom Programme

Between 23rd and 30th September, 1996 the following schedule of telecast on higher education through INSAT-ID under the auspices of the University Grants Commission will be observed. The programme is presented in two sets of one hour duration each every day from 6.00 a.m. to 7.00 a.m. and 1.00 p.m. to 2.00 p.m. The programme is available on the TV Network throughout the country.

Ist Transmission

6.00 a.m. to 7.00 a.m

24.9.96

"Question Time"

"Acupuncture : On Pins and Needles - Part III"

26.9.96

"Monkeys at Tughlaqabad - Part I"

"Coconut Cultivation - Part II"

"Azilian Pebbles"

28.9.96

"Pest Story - Part III"

"The Young Ones: Let Them Be Them"

"The Great Pyramid : A Tomb or an Observatory"

29.9.96

"Science Quest 95-96 - Part III"

"Aerospace Plane"

"The Week Ahead"

IInd Transmission

1.00 p.m. to 2.00 p.m

23.9.96

"The Week Ahead"

"Tuna : Lakshadweep's Big Catch"

"The Story of Rice"

24.9.96

"Crocodiles"

"Nature's Comeback"

"Acupuncture: On Pins and Needles - Part IV"

25.9.96

"Sea Me We"

"The Art of Stamp"

"Mangroves: Life"

26.9.96

"Monkeys at Tughlaqabad - Part II"

"Let Freedom be"

27.9.96

"Exploring Emotions"

"What is Happening to our Climate?"

"Life from Lifeless"

28.9.96

"Science Quest 95-96 - Part IV"

"Nuclear Energy"

29.9.96

No Telecast

30.9.96

"The Week Ahead"
"Superconductivity"
"Ocean Dynamics"

Hindi Telecast

प्रातः 6.00 से 6.30 बजे तक

23.9.96

"श्रमरत नन्हें हाथ"
"मानव जीवन में सहयोग - भाग 2"

25.9.96

"भगवद् श्री रामानुज आचार्य और विशिष्ट अद्वैत"

27.9.96

"जरगा धाम - प्रकृति निसृत संस्कृति"

30.9.96

"देखो सूरज को गौर से"
"मानव जीवन में सहयोग - भाग 3"

News from Abroad

Communicating Science Initiative

Heriot-Watt University in UK is launching a "communicating science" initiative that aims to help young scientists across the country to explain their work to a broader public.

The Esso Teaching Resources Facility, funded by £15,000 from Esso, will underpin a communications skills module for the university's chemistry undergraduates, while £20,000 from the Royal Society of Chemistry will develop the programme for use in other chemistry departments throughout the country. Heriot-Watt will also investigate developing the module for other departments.

"Scientists are not always best known for their ability to communicate complex issues within their field to a wider, less specialist, audience", said Pat Bailey, head of Heriot-Watt's chemistry department.

"But when our students graduate and move out into the commercial world, it's vital that they have good communications skills, whether to make their ideas and research clear to commercial management, to work as part of a team, or to write reports that are both accurate and readable."

The communications module, for third-year students, stresses a practical approach, including presentations, interview practice, team problem solving, research and data retrieval.

Denise Rafferty, higher education development officer at the Royal Society of Chemistry, said: "All chemists need to display various communications skills in their jobs. The development of these skills should be an integral part of the overall chemistry degree course."

The Royal Society was funding the initiative to provide generic, high-quality resource materials for dissemination throughout the United Kingdom, she said.

Martin Times, manager of education and environment programmes within Esso, said British industry needed scientists with core skills, especially communication skills, and graduates would find it hard to get a job without these.

"If we can help to provide these skills through the Heriot-Watt programme, then it must be to the long-term benefit of both students and industry," he said.

Crash Course in Basics

The Teesside University in U.K. is running crash courses in basic skills to bring students up to scratch before they start their degree courses.

Teesside University planned a summer school in skills such as essay writing, maths, numeracy and English to boost the confidence of mature students. But it says school-leavers are also signing up. Now it is hoping to run two-week intensive courses for students applying through clearing.

It will mean taking some who have not met the exact entry qualifications for a course but who the university feels would nevertheless be capable of taking a degree. More than 250 have already signed up, twice as many as expected.

According to university source, "In two to six weeks we can bring them more or less up to a reasonable speed so when they start their degree course they will feel able to cope. We are not just a two A-level university and many of our students already come through access courses or practical experience."

Teesside University, dubbed the "opportunity university" for its commitment to widening access, has received £365,000 from the Higher Education Funding Council for England to run summer colleges for the next four years.

Fellowships for Teachers & Scholars of German

The German Academic Exchange Service (DAAD) proposes to offer Special Fellowship Programmes for Indian university teachers and junior scholars of German. The essential prerequisites are that the nominees must supply recent-dated correspondence not—older than six months — with the German counterparts in question agreeing to the proposed plan of research and the suggested time schedule.

A. Study Visit Grants for Teachers of German ("Deutschlehrer-Programm")

For teachers of German Language and Literature/German Studies at Indian universities, institutes deemed to be universities, and Indian Institutes of Technology, DAAD offers the opportunity to visit Germany for a period of three months, to collect material for further research and teaching.

The offer is made through the University Grants Commission (UGC) who will announce this programme and set its own criteria for pre-selection. In exceptional cases, direct application to DAAD New Delhi is possible.

Nominees should have at least a Master's Degree and a distinctly above-average current proficiency in German. They must have a teaching experience of at least two years and be permanently employed at an Indian institution of higher education, at the time of application.

Applications must be addressed to UGC, at the deadlines given in their announcement. Direct applications have to reach the office of DAAD, 176, Golf Links, New Delhi-110003 by October 18, 1996.

B. Grants for Junior Scholars of German ("Kurztipendien fuer Nachwuchsgermanisten")

Primarily through UGC, DAAD offers 3 to 6 month grants to junior Indian scholars of German language, literature, culture, and society enrolled at Indian universities, to enable them to collect material for their M.Phil. or Ph.D. theses under the guidance of professors at universities in Germany, or to enrol there for short refresher and/or specialisation courses. In exceptional cases, direct applications to DAAD, New Delhi are possible.

Applicants should be M.Phil. or Ph.D. students currently enrolled at Indian universities.

The applications should be accompanied by a recommendation of the Indian university/thesis advisor.

Applications must be submitted to the UGC after their announcement of this programme. Direct applications must reach DAAD, 176, Golf Links, New Delhi-110003 by October 18, 1996.

IUATLD Regional Congress

The 23rd Regional Congress of the International Union Against Tuberculosis and Lung Disease (IUATLD) will be held jointly with the 13th Annual National Tuberculosis Conference on 21-24 April 1997, in Tehran. The scientific programme will include plenary sessions, symposia, workshops and porter presentations, covering many aspects of lung diseases. Tuberculosis will be dealt with special concern due to its alarming situation in some parts of the world.

The topic proposed to be covered include: (i) Tuberculosis — NTP, DOT's, Drug Resistance, Epidemiology, B.C.G., PPD, Diagnosis, TB and H.I.V., Nursing and NGO's; (ii) Smoking and related subjects; (iii) Air Pollution; (iv) Asthma; (v) Lung Cancer; (vi) Occupational Lung Disease; and (vii) Respiratory Infections.

Further details may be had from the National Research Institute of Tuberculosis and Lung Disease, Shaheed Bahonar Ave. Darabad, Tehran 19556-Iran.

BOOK REVIEW

USEFUL ADDITION

Bikash Bhadury*

B. Sengupta and H. Guha. Construction Management and Planning. New Delhi, Tata McGraw-Hill Publishing Co, 1995. Pp. xvi+495. Rs. 120.00

Construction projects are complex and also generally of longer duration. Moreover, they call for large outlays of capital and also greater amounts of other scarce resources, in the form of materials, equipment and manpower. For these reasons, the management of construction projects assumes great importance, particularly in developing nations like India. However, as far as construction jobs and projects are concerned, the planning, resource allocation, scheduling and control of activities on one hand, and management of costs and finances on the other have not received the attention they deserve. Construction management, as a subject, has also not got the attention it deserves in our professional colleges and institutes. This may be due to paucity of good text-books on the subject. This book on construction management will go a long way to fill this void and is thus, a useful and welcome addition to the available literature.

The two authors are eminently qualified to write a book on a subject like construction management — one which calls for knowledge of operations management, financial management and management of contracts in addition to the theory and practice of construction and civil engineering. In addition to being professors of Civil Engineering and teaching the various aspects of construction to budding engineers, they have been practising professionals, being directors of construction projects consulting and civil contracting firms respectively. The authors have done an excellent job of writing an introductory book on construction management, which can be used both by students as a textbook and by practitioners as a reference book. The espoused objective of the authors has also been 'to give a working knowledge of the subject rather than providing any detailed insight into it'.

This is a fairly large book containing 495 pages, of which there are 466 pages of text. The material is presented in nineteen chapters in all. The main text is followed by nine useful appendices and a large bibliography. The bibliography lists a large number of books on construction but only two books on management, namely, Van Horne's Financial Management, and Wiest and Levy's Guide to PERT and CPM. The bibliography should have included books in other areas of operations management and also on operations research. References are invaluable to the more committed students — ones who want to get a deeper insight into the subject.

The first four chapters are on the construction industry — management of construction contracts and on construction organisation and superintendence. These four chapters are very comprehensive and well written. Similarly, chapters six and seven, which are on construction practice, are very well written. The coverage is comprehensive and to the point. The authors must be commended and it must be noted that such chapters can only be written by persons who have a deep knowledge of the practical side of construction. However, chapter five, which is on operation analysis and statistics, is very sektchy. It contains a large number of topics of great diversity, such as probability, probability distributions, sampling and statistical inference (including chi-square test and chi-square distribution), regression and correlation, forecasting, decision theory and replacement decision analysis, as also motion and time studies, activity sampling and multiple activity chart. All of this material has been covered in as few as 22 pages, with the result that some topics merit just a few lines. Moreover, under distributions no mention is made about the versatile distributions such as, Weibull and gamma. The same comment applies to chapters nine and ten. Chapter nine deals with quantitative techniques which can be used for effective management of construction jobs. Chapter ten covers quality control and safety management. Quantitative techniques and quality and safety management are important topics and a better understanding of these concepts, techniques and methods is very necessary for the modern-day construction professional. Chapters five, nine and ten are not well written. They leave a lot of ground uncovered and the presentation of the material is also scrappy and far from satisfactory. The writing of these chapters should have been entrusted to an operations management professional — either a practitioner or a teacher.

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*Professor, Department of Industrial Engineering and Management, and Chairman, Reliability Engineering Centre, Indian Institute of Technology, Kharagpur-721 302.

The treatment of the topics in the chapters on time management and scheduling (eight), resource management and inventory (eleven), accounts management (twelve), cost management (thirteen) and financial management (fourteen) is good. Particular mention must be made about chapters eight and fourteen. In chapter eight, the job and project scheduling techniques, such as the use of bar/Gantt charts, line of balance, CPM and PERT have been presented and explained through illustrative examples of actual construction jobs and contracts. This chapter, in particular, has been very well written, and the presentation is both clear and precise. Similarly, chapter fourteen — on financial management — is both comprehensive and well presented. It deals with all important topics such as NPV, IRR, cost of debt and cost of equity capital, and working capital management. However, it is felt that the material on short-term financing and working capital management could have been better explained if the illustrative data given in Table 14.4 on page 317 was discussed and this was complemented with real-life data from a medium size civil contractors' firm.

There is a chapter on information management and computers as well. This is chapter eighteen. It is well written and it will be of practical use to both students and practitioners. Chapters fifteen and sixteen will also prove to be very useful to practitioners. These two chapters deal with contract and commercial laws and also the relevant labour and industrial laws. The knowledge of these laws is very necessary for the engineers who will be handling construction jobs and contracts.

A project of civil work related with the construction of five four-storeyed office buildings is discussed in chapter seventeen. This is probably the highlight of the book. The case study discusses all aspects of contract management, namely, tender document, conventional quotations, analysis of work programme and site planning. The last chapter is devoted to selected research topics. This chapter will be useful to post-graduate students, research scholars and planners in the construction industry.

The book is generally well edited and the quality of printing is also good. I have no hesitation at all in recommending this book to students and practising professionals.

COMMUNICATION

Improving University Teaching

I read with interest the article Improving University Teaching: The Role of the Teacher by Purani & Kapadia (*Univ. News* 1 July, 1996) which dwells into some of the dismal aspects of college teaching in Gujarat. I find the following aspects quite revealing but do not agree with the analysis and remedies suggested.

True, emphasis must shift from teaching to learning; new technologies must be harnessed; desire to be effective as a teacher influencing attitudes and behaviour of learners must be strong, unionisation must have a limit and self regulation within the profession must have a positive effect.

But is the analysis correct? Is it right to say that coaching classes flourish because of indifference of teachers and passivity of management to provide facilities? I have found for three decades, far deeper causes of the malaise. They are out of date curriculum, uninspiring books, undependable examinations, discouragement to the use of books in English, pressure to inflate results and organised tyranny of otherwise passive parents to seek and enforce softer options. Reading rooms are too small, laboratories and gymnasia are absent, cultural activities are more glamorous rather than substantive and interaction among teachers is mostly on service conditions and benefits alone.

The remedy does not lie in changing rules for recruitment or remodelling promotion avenues. First of all, higher education *cannot be made accessible to all*. It is intellectually suicidal. Library services must be better organised and better used through involvement of librarians. Resources other than textbooks must be integrated into the curriculum design. Students be encouraged to ask questions in and outside the classrooms. Teachers should be available to students for consultation for at least one hour every day. Principals should themselves be model and active teachers.

Exhorting Teachers without influencing other variables will be even counter-productive. We need courage as much as concern for education among policy makers, support from the media, feedback from students and pressure from better-run institutions. Teachers themselves are too weak and demoralised to stem the rot.

P.R. Shah
Retired Professor
H.A. College of Commerce,
Ex-Senate Member,
Gujarat University
Ahmedabad - 380 006

RESEARCH IN PROGRESS

A list of research scholars registered for doctoral degrees in Indian Universities

SOCIAL SCIENCES

Psychology

1. Alakh Niranjan. **A study of personality aspects and social background of delinquent children.** BHU. Dr R Kumar, Department of Psychology, Banaras Hindu University, Varanasi.

2. Arya, Yogesh Kumar. **Affective memory in brain damaged and normal subjects.** BHU. Dr C B Dwivedi, Department of Psychology, Banaras Hindu University, Varanasi.

3. Asthana, Sangita. **Psycho-social correlates and mental health of women.** BHU. Dr M Arora, Department of Psychology, Banaras Hindu University, Varanasi.

4. Gupta, Anu. **Gender discrimination and personality growth of female children: A psychological study.** BHU. Dr A K Srivastava, Department of Psychology, Banaras Hindu University, Varanasi.

5. Pandey, Ashwini Kumar. **Cognition and personality as a function of bio-feed back and progressive relaxation in hypertensive and anxiety patients.** BHU. Dr B S Gupta, Department of Psychology, Banaras Hindu University, Varanasi.

6. Pandey, Birendra Kumar. **Pollutant, psychological health and work efficiency.** BHU. Dr B S Gupta, Department of Psychology, Banaras Hindu University, Varanasi.

7. Pandey, Sushma. **Letoral organization of cerebral hemisphere for cognitive and emotional stimuli.** BHU. Dr M K Mandal, Department of Psychology, Banaras Hindu University, Varanasi.

8. Rai, Dhirendra Kumar. **Drug abuse and its relationship with certain psychological variables.** BHU. Dr B S Gupta, Department of Psychology, Banaras Hindu University, Varanasi.

9. Singh, Manisha. **A comparison of various therapeutic techniques for assessment of modification of coping skills among depressed and normal middle aged women.** BHU. Dr S K Kaushik, Department of Psychology, Banaras Hindu University, Varanasi.

10. Singh, Sanjewa Kumar. **Improving worker's productivity and satisfaction through production standard, performance feedback and monetory in industrial set-up.** BHU. Dr A P Singh, Department of Psychology, Banaras Hindu University, Varanasi.

11. Sinha, Poonam. **Parent-child relation and mental health among adolescents.** BHU. Dr (Mrs) M Arora, Department of Psychology, Banaras Hindu University, Varanasi.

Sociology

1. Ajit Kumar. **Shikshit karyojit mahilayon kee bhumika dwandha evam samajik samayojan : Shaskiya karyalayon mein karyarat mahila lipikon per adharit ek samajshastriya adhyayan.** BHU. Prof Vishnu Gopal, Department of Sociology, Banaras Hindu University, Varanasi.

2. Maurya, Rakesh Kumar. **Muslim samudaya mein bal shramik.** BHU. Prof Mohd Salim, Department of Sociology, Banaras Hindu University, Varanasi.

3. Mishra, Vandana. **Social aspects of hospital organization in Varanasi Distt.** BHU. Dr Manju Biswas, Department of Sociology, Banaras Hindu University, Varanasi.

4. Sathiya Susuman, A. **Sex preference, contraception and fertility.** Kerala. Dr V Gopalakrishnan Asari, Deputy Director, Population Research Centre, University of Kerala, Kariavattom.

5. Singh, Pramod Kumar. **Middle class consumer.** BHU. Dr A K Kaul, Department of Sociology, Banaras Hindu Universiy, Varanasi.

Political Science

1. Bhatt, Priyanka. **Intergrating Marxian philosophy: A study in Lukacs.** BHU. Prof Nalini Pant, Department of Political Science, Banaras Hindu University, Varanasi.

2. Bhattacharya, Sonali. **Reintegrating human rights: A third world perspective.** BHU. Dr C K Padia, Department of Political Science, Banaras Hindu University, Varanasi.

3. Fasihi, Reyazuddin. **Sthaniya nikayon mein Muslim samaj kee bhumika : Banaras tatha Mau Jile ke vishesh sandarbha mein.** BHU. Dr A S Upadhyaya, Department of Political Science, Banaras Hindu University, Varanasi.

4. Pandey, Kanchan. **Mahabharat mein rajatantra.** BHU. Prof R N Sharan, Department of Political Science, Banaras Hindu University, Varanasi.

5. Rampravesh Singh. **Matsya Puran mein rajtantra.** BHU. Prof R N Sharan, Department of Political Science, Banaras Hindu University, Varanasi.

6. Rasid Ahamad. **Swami Vivekanand ke rajanitik vichar.** BHU. Dr C K Padia, Deparment of Political Science, Banaras Hindu University, Varanasi.

7. Roy, Avanindra Kumar. **Bharat mein chunav sudhar : T N Shesan ke karyakal ke vishesh sandarbha mein.** BHU. Prof R N Sharan, Department of Political Science, Banaras Hindu University, Varanasi.

8. Shrivastava, Ajay Kumar. **Gandhi ke chintan mein manav adhikar kee avadharana.** BHU. Dr C K Padia, Department of Political Science, Banaras Hindu University, Varanasi.

9. Singh, Kunwar Bhanu Pratap. **Concept of conflict resolution in Manu.** BHU. Dr C K Padia, Department of Political Science, Banaras Hindu University, Varanasi.

10. Vijayan, P P. **Reservation policy and judicial activism.** Kerala. Dr B Mohanan, Lecturer, Department of Political Science,

VTM NSS College, Dhanuvachapuram.

11. Yadav, Bhavana. **Swatantrayottar Bharatiya rajniti mein sampradayikta evam antra samudaya mein sadbhavna ka adhyayan.** H S Gour. Dr G P Nema, Reader, Department of Political Science, Dr Harisingh Gour Vishwavidyalaya, Sagar.

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22. Singh, Narendra Pratap. **Varanasi Janapada puratattva.** BHU. Dr Birendra Pratap Singh, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

23. Singh, Rashmi. **Rajput rajvanshon kee utpatti.** BHU. Dr

P N Singh, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi

24. Sinha, Ashok Kumar. **Sitamarhi Jile ke puratattva.** BHU. Dr Birendra Pratap Singh, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

25. Sita. **Sister Nivadita ka Bharatiya samajik tatha rashtriya andolan mein yogdan.** BHU. Dr Sumitra Gupta, Department of History, Banaras Hindu University, Varanasi.

26. Srivastava, Pratigya. **Gandhi kee dharmik asthayen, Gandhi vangmay ke alok mein.** BHU. Dr A Sinha, Department of History, Banaras Hindu University, Varanasi.

27. Tanna, Krishna. **Pauranik sahitya mein dharma ka swaroop.** BHU. Prof P C Pant and Dr Mohd Naseem, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

28. Tewari, Vimal Kumar. **Adhunik Bharatiya itihas lekhan aur Gandhiji.** BHU. Dr S Gupta, Department of History, Banaras Hindu University, Varanasi.

29. Tiwari, Rudrendra. **Ambedkar kee samajik drishti.** BHU. Dr A Sinha, Department of History, Banaras Hindu University, Varanasi.

30. Upadhyay, Ashok Kumar. **Bharat Kala Bhavan mein sangrihit purva madhyakalin sikkon ka adhyayan.** BHU. Prof P C Pant and Dr P N Singh, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

THESES OF THE MONTH

A list of doctoral theses accepted by Indian Universities

BIOLOGICAL SCIENCES

Agriculture

1. Ahmad, Md. Reyaz. **Investigation on epidemiology and management of blast disease of ragi, Eleusine coracana (L) Gaertn.** caused by Pyricularia qrisea (Cke.) Sacc. Birsa Agrl.

2. Bhat, Abdul Salam. **Effect of challenge feeding on the performance of high yielding cows and buffaloes.** PAU.

3. Mukhopadhyay, Swaraj Kumar. **Statistical analysis of climatic factors and their relative influence on economic factor in agriculture for a selected district of terai zone in West Bengal.** NBU.

4. Quraishi, Shoeb. **Hydrological investigations of small watersheds of plateau region of Bihar for efficient watershed management.** Birsa Agrl.

5. Vinay, Sagar. **Studies on root rot disease complex on peas.** HP Krishi. Dr SK Sugha, Department of Plant Pathology, Himachal Pradesh Krishi Vishvavidyalaya, Palampur.

6. Singh, Divesh Kumar. **Studies on epidemiology and control of chickpea, Cicer arietinum L. wilt caused by Fusarium oxysporum Lsp. ciceri in plateau region of Bihar.** Birsa Agrl

Biochemistry

7. Lalitha, J **Micellar enzymology.** Gulbarga. Dr V H Mulimani, Department of Studies in Bio-Chemistry, Gulbarga University, Gulbarga.

8. Naga, Prasad S.V. **Studies on the phenylalanine ammonia lyase (PAL) gene (s) of Arabidopsis thaliana.** JNU Prof K C Upadhyaya, School of Life Sciences, Jawaharlal Nehru University, Delhi.

9. Sharma, Ranjana. **Characterization and regulation of DAHP synthetase and chorismate mutase during development in Brassica juncea.** JNU. Dr Neera B Sarin, School of Life Sciences, Jawaharlal Nehru University, Delhi.

10. Tiwari, Swati. **Investigations on the molecular mechanism of cobalt induced alterations in pigment composition and stimulation of photochemical activity in Cyanobacteria.** JNU. Prof P K Mohanty, School of Life Sciences, Jawaharlal Nehru University, Delhi.

EARTH SYSTEM SCIENCES

Earth Sciences

1. Jaiswal, G.S. **Hydrochemical studies of groundwater and the environmental responses in and around the Joda Iron Ore Belt of Keonjhar District, Orissa (India).** Ranchi. Dr Dharun Mahato, Department of Geology Postgraduate Centre, Ranchi Universit, Chaibasa.

2. Mallikharjuna, Murthy V. **Potential applications of satellite derived NDVI in surface layer - A regional case study for Andhra Pradesh.** Andhra. Prof. K P R Vittal Murthy, Department of Meteorology and Oceanography, College of Science and Technology, Andhra University, Waltair.

ENGINEERING SCIENCES

Engineering

1. Nampoothiri, E. Vasudevan. **Behaviour of three-dimensional reinforced concrete frames with ductile joints under cyclic lateral forces.** Anna. Dr. M. Lakshmipathy, Prof. Department of Planning and Development, Anna University, Madras.

2. Shanmuga, Sundaram V. **Forecasting housing need, demand and supply in Madras metropolitan area.** Anna. Dr. T. Anantharajan, Prof. and Head, Division of Traffic and Urban Systems Engineering, College of Engineering, Anna University, Madras.

ENVIRONMENTAL SCIENCES

1. Arumugam, Muhuntha. **Selenium cycling in soil-fodder and animals in and around Karnal, Haryana state.** JNU. Dr R Subramanian, School of Environmental Sciences, Jawaharlal Nehru University, Delhi.

2. Joshi, Hari Krishana. **Complex Terrain Diffusion Model**

for Nagothane, Distt. Raigarh, Maharashtra. JNU. Prof B Padmanabhamurty, School of Environmental Sciences, Jawahar Lal Nehru University, Delhi.

3. Sahoo, Sunanda. **Agro potentiality of paper mills effluents: Its effect on soil, crop and earthworms.** Sambalpur. Dr P C Mishra, Reader, P.G. Department of Environmental Science, Sambalpur University, Burla.

Life Sciences

1. Basavarajappa, S. **Grasserie disease of the silkworm, Bombyx mori (L) in northern districts of Karnataka.** Karnataka. Dr C J Savanurmath, Department of Sericulture, Karnataka University, Dharwad.

2. Gouri, Vijaya B.S. **Molecular studies on protein tyrosine kinase Hck.** JNU. Dr. Ghanshyam Swarup, Centre for Cellular and Molecular Biology, Jawaharlal Nehru University, Delhi.

3. Gupta, Illora. **Mode of action of photodynamic reactions mediated by diphenyl ether herbicides.** JNU. Dr B C Tripathy and Prof G S Singhal, School of Life Sciences, Jawaharlal Nehru University, Delhi.

4. Gurvinder, Kaur. **Analysis of Co-segregation of disease phenotype with defined genetic markers on chromosome 2q31-35 in M. leprae responsive/non-responsive individuals.** JNU. Dr R N K Bamezai, School of Life Sciences, Jawahar Lal Nehru University, Delhi.

5. Jaswinder, Kaur. **Chromosome characterization of hexaploid substitutional white grained triticales.** PAU.

6. Rajesh, Kumar. **Studies on hybridization in apple, Malus domestica Borkh.** Y S Parmar. Dr. R.L. Sharma, Dean (Retd.), College of Horticulture, Nauni (Solan) H.P.

7. Mitra, Indrani. **A comparative study of sensitive and tolerant plants in relation to sulfur dioxide stress and recovery.** JNU. Prof C K Varshney, School of Environmental Sciences, Jawaharlal Nehru University, Delhi.

8. Padma, P. **Studies on hepatotoxins in relation to mitochondrial function.** Hyderabad. Dr O H Setty, School of Life Sciences, University of Hyderabad, Hyderabad.

9. Patil, Manohar. **Studies on the gonadal cycles in some fresh water fishes of Gulbarga.** Gulbarga. Dr R S Kulkarni, Department of Studies in Zoology, Gulbarga University, Gulbarga.

10. Venkata, Rama Rao K. **Cellular and sub-cellular transport and Metabolism of branched-chain amino acids in young, adult and aged rat brain.** Hyderabad. Dr. Ch. R.K. Murthy, School of Life Sciences, University of Hyderabad, Hyderabad.

11. Rather, Abdul Gani. **Heterosis combining ability and stability in sunflower Helianthus annuus L.**, PAU.

12. Singh, Rajkumar Imotomba. **Survival, pathogenic variability and management of Sphingomonas oryzae sp. nov. causing bacterial blight of rice in Manipur.** Manipur. Dr. N. Ibotom Singh, Department of Plant Pathology, Central Agricultural University, Iroishemba.

13. Sinha, Ashok Kumar. **Genetics of Alternaria blight resistance and yield in durum wheat, T. durum DESF.** Bihar. Dr S S Prasad, Prof. (Retd.), Department of Botany, Bhimrao Ambedkar Bihar University, Muzaffarpur.

14. Terdalkar, Sarfraj Sameer. **Studies on the role of physico-chemical factors on microfauna with special reference to zooplanktons in Bay of Bengal and in and around Andaman Sea.** Goa. Dr I K Pai, Department of Zoology, Goa University, Goa.

15. Uma, L. **Proteins of the corneal stroma: A spectroscopic study.** JNU. Prof. D. Balasubramanian, Centre for Cellular and Molecular Biology, Jawaharlal Nehru University, Delhi.

Medical Sciences

1. Bagchi, Kunal. **An analysis of expanded programme on immunization in two districts of West Bengal.** JNU. Prof. D. Banerji, Centre of Social Medicine and Community Health, Jawaharlal Nehru University, Delhi. and Late Dr S K Sahu.

2. Thakur, Deepa. **Pattern of neuropsychological recovery in head injury - a psychophysiological study.** Bangalore. Dr C R Mukundan, Prof. Department of Clinical Psychology, NIMHANS,Bangalore.

Veterinary Sciences

1. Beevi, S. Noorjahan. **Status of heavy metal pollution and its impact on marino biology in Tuticorin Bay.** TNVAS. Dr. K. Venkataramanujam, Dean, Fisheries College and Research Institute, Tuticorin.

2. Jesudas, Joseph Andrew. **Studies on black quarter vaccine.** TNVAS. Dr A T Venugopalan, Director, Centre for Animal Health Studies.

3. Rajagopalsamy, C.B.T. **Nutrient dynamics in fresh water fish culture system.** TNVAS. Dr. N. Ramanathan, Prof., Department of Fisheries Form Management, Fisheries College and Research Institute, Tuticorin.

MATHEMATICAL SCIENCES

Mathematics

1. Faisal, U. **Solution to some convex and non-convex programming problems.** AMU. Prof. S.U Khan Aftab, Department of Statistics and Operations Research, Aligarh Muslim University, Aligarh.

2. Goswami, Dharanidhar. **Some studies in relativistic cosmology.** Gauhati. Prof K D Krori (Retd.) Emeritus Fellow, Department of Physics, Cotton College, Guwahati.

3. Lobiyal, Daya Krishan. **A suitable grammar for parsing Hindi text.** JNU. Prof. G.V. Singh, School of Computer and Systems Sciences, Jawaharlal Nehru University, Delhi.

4. Meher, Pramod Kumar. **Fast discrete Hartley transform algorithm: Performance study and applications.** Sambalpur. Dr G Panda, Prof. Department of Applied Electronics and Instrumentation Engineering, Regional Engineering College, Rourkela.

5. Mohammad, Naseh. **Some developments in stochastic**

programming and its applications. AMU. Dr M M Khalid, Department of Statistics and Operations Research, Aligarh Muslim University, Aligarh.

6. Sahu, Daya Ram. **On fixed points of deterministic and probabilistic spaces.** Ravishankar. Dr B K Sharma, Reader and Head,School of Studies in Mathematics, Pt. Ravishankar Shukla University, Raipur.

7. Sarkar, Jagadish. **Some dynamic mixed boundary value problems in isotropic and orthotropic elastic media.** NBU. Dr S C Mondal, Department of Mathematics, North Bengal University, Raja Rammohanpur.

8. Venkatesh, Devadas Manjunath. **Some studies in certain spirallike and related functions.** Karnatak. Dr S S Bhoosnurmath, Prof. Department of Mathematics, Karnatak University, Dharwad.

PHYSICAL SCIENCES

Chemistry

1. Chakraborty, Bhaskar. **Studies of 1,3 dipolar cycloaddition reactions with N- cyclohexyl nitrones.** NBU. Prof G S S Murthi, Department of Chemistry, North Bengal University, Raja Rammohanpur.

2. Dash, Sukalyan. **Oxidation studies with cotyl trimethyl ammonium permanganate.** Sambalpur. Dr B K Mishra, P.G. Department of Chemistry, Sambalpur University, Burla.

3. Jebarathinam, N John. **Preparation, characterisation and catalytic activities of binary and ternary spinel oxides for dehydrogenation of ethylbenzene and cyclohexanol.** Anna. Dr. V. Krishnasamy, Prof. Department of Chemical Engineering, Alagappa College of Technology, Madras.

4. Sharma, Kalpana. **Application of amide and its derivative in trace element analysis.** Ravishankar. Dr. K S Patel, Lecturer, School of Studies in Chemistry, Pandit Ravishankar Shukla University, Raipur.

5. Trivedi, Amit Yagnesh Kumar. **Studies on antimicrobial compounds.** Bhavnagar. Prof P B Trivedi, Department of Chemistry, Bhavnagar University, Bhavnagar.

Physics

1. Agarwal, Ashish. **Investigation of spectral characteristics and coherence properties of optical systems in the presence of fluctuating drives.** JNU. Dr. Rupamanjari Ghosh, School of Physical Sciences, Jawaharlal Nehru University, Delhi.

2. Pishak, Devi Langonjam. **Fractal analysis of some random phenomena.** Manipur. Dr Th Jekendra Singh, Department of Physics, Manipur University, Imphal.

3. Nath, Aparna. **Studies of structure and properties of liquid crystals.** NBU. Dr. Shukla Pal, North Bengal University, Raja Ramamohanpur.

4. Ravindran, P. **Electronic structure, phase stability and equation of state studies on structural and superconducting intermetallics.** Anna. Dr. R. Ashokamani, Prof. Department of Physics, College of Engineering, Anna University, Madras.

5. Shanta, P. **Application of thermofield dynamics to equilibrium and non-equilibrium problems.** Hyderabad. Prof. S. Chaturvedi, Department of Physics, University of Hyderabad, Hyderabad.

6. Vidyapriyan. **Magnetic resonance studies of solids and powders.** Bangalore. Dr K H Channappa Prof. (Retd.), Department of Physics, Bangalore University, Bangalore.

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CLASSIFIED ADVERTISEMENTS

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PONDICHERRY - 695 014

No: PEC/E.4/Rect (NT)/'96/3183 **Date: 2-9-'96**

NOTIFICATION

Applications in the prescribed form are invited for the following posts:-

Sl.No.	Name of post with scale of pay	SC	ST	OBC	UR	Total
1.	**LECTURER** Rs. 2200-75-2800-100-4000					
(a)	Computer Science & Engineering	-	1	1	4	6
(b)	Mechanical Engineering	1	1	-	1	3
(c)	Electronics & Communication Engineering	1	-	-	-	1
(d)	Electrical & Electronics Engineering	-	-	-	2	2
(e)	Chemistry	1	-	-	-	1
(f)	English	-	-	1	-	1
2.	**SENIOR ACCOUNTS OFFICER** Rs. 2000-60-2300-75-3200-100-3500	-	-	-	1	1
3.	**SUPERINTENDENT GRADE - I** Rs. 1640-60-2600-75-2900	-	-	-	1	1
4.	**SUPERINTENDENT GRADE - II** Rs. 1600-50-2300-60-2660	1	-	-	1	2
5.	**SENIOR INSTRUCTOR (PHYSICS)** Rs. 2000-60-2300-EB-75-3200	1	-	-	-	1

Details regarding qualifications, general conditions etc can be obtained alongwith application form by sending a Demand Draft for Rs. 50/- (Rs. 15/- for SC/ST) drawn in favour of Principal, Pondicherry Engineering College with self addressed envelope (10 cm x 23 cm size) affixed with postal stamp of Rs 6/-. APPLICANTS ALREADY APPLIED IN RESPONSE TO THE EARLIER ADVERTISEMENT FOR THE POST OF SUPERINTENDENT GRADE - I & II NEED NOT APPLY AGAIN. Applications in the prescribed form complete in all respects must reach this college on or before **15th October, 1996.**

PRINCIPAL

UNIVERSITY GRANTS COMMISSION
SOCIAL SCIENTIST EXCHANGE PROGRAMME

Applications are invited from University/College teachers to visit France under Social Scientist Exchange Programme to carry out research in identified areas. The main areas of research are Economic & Political Economy, History, Social & Political Studies, Linguistics, Semiotics, Cognitive Sciences. Besides these priority areas other fields are open to Joint or individual research. This programme provides for visits of scholars for 1 month. The UGC would provide to and fro travel expenses to the selected teachers and the French side would provide maintenance allowances upto 10,000 Francs per month.

The last date for receipt of applications in the UGC office duly completed is 30/9/1996.

- davp 823 (9) 96

NORTH GUJARAT UNIVERSITY

PATAN - 384 265

Applications are invited in the prescribed form alongwith details, available from cash counter on payment of Rs. 50/- in cash or by crossed I.P.O. in favour of Registrar, North Gujarat University, Patan (N.G.) for the following posts, so as to reach the undersigned on or before 30-9-1996.

A **Professor** Mathematics - 1
(Reserved for S.T. Candidates)

B **Reader** English - 1
(Two posts reserved, one each for S.T. and S.C. Candidates) Mathematics-1
Management-1

C **Lecturers** Management-2
(Both posts reserved, one each for S.E.B.C. and S.T. Candidates)

Conditions:

1. Knowledge of Gujarati is essential for all the posts.
2. Number of posts in reserved category may vary. If candidates of reserved category are not available for the above posts, other applicants may be considered for recruitment.
3. Those who have applied earlier may apply again.

Date: 30-8-96 **Bharat Shah**
Place: Patan-384265 **REGISTRAR**

JADAVPUR UNIVERSITY

CALCUTTA-700 032

Employment Notification No.A2/C/3/96
Ref: REC/N/2909/96

Dated, September 6, 1996.

The University invites application in the prescribed form for the following posts:

1. Professor
   a) Food Technology & Bio-Chemical Engineering - One post
   b) Chemical Engineering - One post
   c) Mechanical Engineering - One post

Qualifications : As per U.G.C. norms.

2. **Reader**
   a) Architecture - One post (Reserved for SC)
   b) Food Technology & Bio-Chemical Engineering - One post (Reserved for SC)

- c) Mechanical Engineering - One post (Reserved for SC)
- d) Chemistry - Two posts (One post reserved for ST)

Qualifications : As per U.G.C norms.

3.Lecturer

- a) **Power Plant Engineering** - Two posts (One post reserved for ST)
- b) Civil Engineering - Three posts (One post reserved for SC One post reserved for ST)
- c) Instrumentation Engg. - One post
- d) Construction Technology - Two posts (One post reserved for ST)
- e) Chemical Engineering - One post (Reserved for SC)
- f) Physics - Three posts (One post reserved for ST)
- g) Chemistry - One post
- h) Mathematics - Two posts
- i) Economics - One post (Reserved for SC)
- j) Comparative Literature- One post (Reserved for SC)

Qualifications : As per U.G.C. norms.

Details of Essential and Desirable Qualifications and Specialisation of the above posts may be had from the Information Office of the University at the time of Receiving Application form.

Scale of Pay :

Professor - Rs. 4500-150-5700-200-7300/-
Reader - Rs. 3700-125-4950-150-5700/-
Lecturer - Rs. 2200-75-2800-100-4000/-

4. Audit Officer - One post (Reserved for SC)

Scale of Pay - Rs. 2200-75-2800-100-4000/-

5. Scientific Officer - One post (Reserved for ST)

Scale of Pay - Rs. 2200-75-2800-100-4000/-

6. Dean of Students - One post

Scale of pay: Rs.4500-125-5700-200-7300/-

Details of Essential and Desirable Qualifications for the post at Sl. Nos. 4, 5 and 6 may be had from the Office of the Information of the University at the time of Receiving Application form.

7. Information Scientist - One post (Year to Year renewal basis)

Scale of Pay : Rs. 4500/- per month (consolidated)

Details of Qualification may be had from the Information Office of the University at the time of Receiving Application form.

Last Date of Receiving Application is **28th September, 1996.**

Application forms are obtainable from the Information Office of the University during working hours on payment of Rs. 50/- or by post on payment of Rs. 55/- in Bank Draft inclusive of postage.

REGISTRAR

UTKAL UNIVERSITY

VANI VIHAR : BHUBANESWAR-4 (ORISSA)

CORRIGENDUM

No. Estt.I/1041-C(Vol.VII)/19285/96 **Dated: 03.09.96**

Corrigendum to advertisement No. Estt. I/1041-C(Vol.VII)/6973/96, dated 12.04.96.

Faculty/ Deptt.	Posts already advertised in Lecturer grade	Posts now readvertised after recasting on Roster point according to O.R.V. Act in Lecturer grade only
A & A Economics	1 ST 1 SC	1 ST 1 UR
Botany	1 ST 1 SC 1 UR (Leave Vacancy)	1 ST 2 UR (out of which one is for leave vacancy)
Computer Science & Application	1 ST 1 SC 1 UR	1 ST 2 UR
Geography	1 ST 2 SC	1 ST 1 UR
Law	1 ST 1 ST(W) 1 UR	1 ST 2 UR
Physics	1 ST 1 SC	1 ST 1 UR
Sanskrit	1 ST 1 SC	1 ST 1 UR

1. In response to advertisement No. mentioned above, the persons who have not applied may apply, but the persons who have already applied need not apply again.
2. The **Last Date** for receipt of application for all categories of teaching posts which were advertised on 12.04.96 is **extended upto 10.10.96 (The 10th October, 1996).**
3. Candidates intending to apply for different posts under a particular faculty are required to apply separately.
4. The post of Reader in Geography advertised earlier vide advertisement No. Estt.I/1041-C (Vol.VII)/6973/96 dated 12.04.96 is to be read as **"Permanent"** instead of **Temporary.**

REGISTRAR

UNIVERSITY GRANTS COMMISSION

NOTIFICATION

It is notified that the next UGC test for Junior Research Fellowship and Eligibility for Lectureship will be held on 29th December, 1996 (SUNDAY) in Humanities, Social Sciences (including languages), Computer Application and Electronic Science. The candidates who desire to appear in the test may see the detailed advertisement in the Employment News dated 7-9-96.

— davp 823 (8) 96 **Deputy Secretary**

TILAK MAHARASHTRA VIDYAPEETH
(DEEMED UNIVERSITY)
VIDYAPEETH BHAVAN, GULTEKADI
PUNE 411 037

Advt. No. 10/96 **Date: 4 September 1996**

Applications are invited in the prescribed form for the following posts, so as to reach the undersigned on or before **4th October 1996.**

Sr. No.	Name of the Post	No. of Posts	Reservation
1.	Professor in Sanskrit	1	Open
2.	Professor in Economics/Politics	1	Open
3.	Reader in Ayurveda	1	Open
4.	Lecturer in Economics	1	S.C.
5.	Lecturer in Sociology	1	S.C.

Qualifications and pay scales for the above posts are as per the norms laid down by the University Grants Commission, the details of which are available alongwith the application form in the Vidyapeeth on payment of Rs. 30/- by cash, or Rs 40/- by D.D./I.P.O. in favour of the "Registrar, Tilak Maharashtra Vidyapeeth, Gultekadi, Pune 411 037". Those who had applied earlier for the posts of 'Professor' and 'Reader' need apply again.

Details of minimum qualification, experience etc. required for the appointment to the posts of Professor, Reader and Lecturer prescribed by the University Grants Commission.

1) **PROFESSOR** : 2 Posts - Open (1 Sanskrit, 1 Eco./Pol.)
   Pay Scale : Rs.4500-150-5700-200-7300

Qualifications

An eminent scholar with published work of high quality actively engaged in research with 10 years of experience in postgraduate teaching and/or research at the University/ national level Institutions, including experience of guiding research at doctoral level.

or

An outstanding scholar with established reputation who has made significant contribution to knowledge

Sanskrit :-

(i) Specialization in one or more of the following: Veda, Mimamsa, Sahityashastra, Vedanta
(ii) Knowledge of German and/or French and Proficiency in Marathi.
(iii) Desirable.- Studies in Indo-Aryan Linguistics/ Sanskrit Gramatical System.

Eco./Pol. :- Interest in interdisciplinary Studies.

Experience - Administrative experience of at least five years' is preferred.

(2) **READER** : 1 Post - Open (Ayurveda)
Pay Scale : Rs. 3700-125-4950-150-5700

Qualifications

Good academic record with a doctoral degree or equivalent published work. Candidates from outside the University system shall in addition possess atleast 55% marks or an equivalent grade at the Master's degree level.

Specialization in Kaya-Chikitsa/Sanskrit Samhita Siddhanta is essential.

Experience

Eight years' experience of teaching at the graduate, postgraduate level. Research in the areas of scholarship as evidenced by quality of publications, contribution to educational renovation, design of new courses and curricula.

Desirable - Post-doctoral research work of high standard.

(3) **LECTURERS**: 2 Posts (1 Economics, 1 Sociology)
Pay scale : Rs. 2200-75-2800-100-4000

Qualifications

Good academic record with atleast 55% marks or an equivalent grade at Master's degree level in the relevant subject from an Indian University or *an equivalent degree from a foreign* University.

Candidates, besides fulfilling the above qualifications, should have cleared the eligibility test for lecturers conducted by UGC, CSIR or similar test accredited by the UGC

or

should have submitted their Ph.D thesis, or completed their M.Phil degree by 31st December 1993.

Experience

Preference will be given to those candidate having sufficient teaching experience at graduate level.

R.K. Dhavalikar
REGISTRAR

राष्ट्रीय संग्रहालय संस्थान: कला इतिहास, संरक्षण एवं संग्रहालय विज्ञान (विश्वविद्यालयवत)

National Museum Institute of History of Art, Conservation and Museology

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Applications from eligible candidates are invited for the following posts in the Institute

1 Asstt. Professor (History of Art) - one (Reserved for SC candidate)
2. Asstt Professor (Museology) - one
3. Asstt Professor (Conservation & Restoration of Works of Art) - one

Pay Scale: Rs. 2200-4000

Qualifications:

Good academic record with at least 55% marks or an equivalent grade at Master's degree level in the relevant subject from an Indian University or an equivalent degree from a foreign University.

Candidates besides fulfilling the above qualifications should have cleared eligibility test for lecturers conducted by UGC, CSIR or similar test accredited by the UGC.

Provided that candidates who have submitted Ph.D. thesis or passed the M.Phil. examination by 31st December 1993, are exempted from the eligibility test for lecturers conducted by UGC, CSIR or similar test accredited by the UGC.

Age Limit:

40 years, relaxable as per rules of the Institute.

Method of recruitment:

By direct recruitment failing which by transfer on deputation/short term contract not to exceed 5 years.

Relaxations:

Any of the above provisions are relaxable for reasons to be recorded in writing by the competent authority as per UGC norms.

Applications on plain paper giving full details of name, address, qualifications, experience, published/research work, etc., alongwith a crossed Bank Draft of Rs. 50/- payable to Registrar, NMIHACM at Delhi and a passport size photograph, proof of age and qualifications, etc., may be sent to the undersigned upto **October 14, 1996.**

REGISTRAR

davp/3457/4/96

DR. B.R. AMBEDKAR CENTRE FOR BIOMEDICAL RESEARCH
(UNIVERSITY OF DELHI)

CORRIGENDUM

Ref. Advt. No. DU/ACPR/Estab./Advt. 01/96-97

The Qualification for the post of Research Associate and the scale of pay for the post of Lab Attendant be read as under :-

Research Associate :-

Consistently good academic record with first or high second class (B+), Master's Degree or equivalent degree of a foreign University in Synthetic Organic Chemistry.

Lab. Attendant :-

Pay Scale : Rs.950-20-1150-EB-25-1400

Other conditions remain unchanged.

(Prof. Ramesh Chandra)
Director

THE BABASAHEB BHIMRAO AMBEDKAR UNIVERSITY

1/16, VIRAM KHAND, GOMTI NAGAR
LUCKNOW-226010

ADVERTISEMENT NO. 2/96

Application on prescribed forms are invited for the following posts by **30-10-1996**.

S.No.	Name of the Post	Pay scale (in Rs.)	No. of Vacancies
1	Librarian	4500-7300	1
2.	Deputy Registrar	3700-5700	1
3.	Executive Engineer	3000-4500	1
4	Medical Officer	3000-4500	1
5.	Security Officer	3000-4500	1
6.	Assistant Registrar	2200-4000	3
7.	Assistant Finance Officer	2200-4000	1
8.	Computer Programmer	2200-4000	1
9	Assistant Librarian	2200-4000	1
10	Section Officer	2000-3500	1
11.	Private Secretary	2000-3500	1
12	Personal Assistant	1640-2900	1
13.	Senior Assistant	1400-2300	5
14	Stenographer	1400-2300	1
15	Computer Operator	1200-2040	1

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(Number of posts may vary at the discretion of the University)

राष्ट्रीय संग्रहालय संस्थान: कला इतिहास, संरक्षण एवं संग्रहालय विज्ञान (विश्वविद्यालयवत)

National Museum Institute of History of Art, Conservation and Museology

(Deemed University)

Janpath, New Delhi - 110011

ADMISSION NOTICE

Applications on prescribed forms are invited from those who are keen to develop their sensibility to appreciation of art for admission to the following Certificate Courses, each of five months duration comprising twenty illustrated lectures (including two dance demonstrations)

1 INDIA ART & CULTURE
One lecture on every Thursday exclusively on Indian Art and Culture of two hours duration. from 10 30 a m to 12 30 p m

2 ART APPRECIATION
One lecture of two hours duration on global art (Indian and Western Ancient and Modern Art) every Thursday from 5 30 p m to 7 30 p m

3 BHARTIYA KALA NIDHI (Hindi Medium)
One lecture of two hours duration on Indian Art from 10 30 a m to 12 30 p m on every Tuesday

ELIGIBILITY & TERMS

No formal degree of University is required for the above courses The candidate should, however, have deep interest in art Admission to the courses is through interview which will be held in the third week of October, 1996 Fees for each course is Rs 300/-

Information Brochure containing blank application form can be had from the Office of the Institute on payment of Rs 10/- in cash or Rs. 30/- by Crossed Bank Draft if required by post and the same duly filled in and affixed with photograph, may be sent by registered post or delivered personally, so as to reach the Registrar of the Institute latest by **30th September, 1996.**

davp /3457/5/96

REGISTRAR

GOA VIDYAPRASARAK MANDAL'S

COLLEGE OF EDUCATION

POST BOX NO. 139
FARMAGUDI, PONDA
GOA 403 401

Applications with full bio-data are invited for the following post so as to reach the Principal **within 15 (fifteen) days** from the date of publication of this advertisement.

Applications must be accompanied by certified copies of marksheets of all the examinations from S.S.C. onwards. Those already employed, shall forward their applications through proper channel.

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Full Time Lecturer in Education (Methodology of teaching Hindi) - 1 post Advertised for the second time and only SC/ST candidates need apply).

Qualifications :- Candidates should have Master's Degree in the relevant subject (i.e. Education) with at least 55% marks or its equivalent grade and good academic record as prescribed by U.G.C.

Candidates applying for the above post, must be citizens of India and should have passed the eligibility test for lectureship conducted by the U G.C. or a similar test accredited by the U.G C.

Scale of pay:- Rs. 2200-75-2800-100-4000 plus admissible allowances as per rules.

Terms and conditions of service are those laid down by the Goa University/Directorate of Education, Government of Goa and other competent authorities.

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THE BABASAHEB BHIMRAO AMBEDKAR UNIVERSITY

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ADVERTISEMENT NO. 1/96

Applications on prescribed forms are invited upto **30.10.96** for the posts of Professors(5), Readers(6) and Lecturers(10) in the Schools for Ambedkar Studies, Information Science and Technology, Environmental Studies and Centres for Human Rights, Rural Technology and Vocational Studies. The salary, total emoluments and minimum qualifications will be as per UGC norms. Highly qualified and experienced candidates may be considered for advance increments.

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ICDE Asia Conference on Open and Distance Education (CODE)

5-7 December 1996, New Delhi

International Council of Distance Education (ICDE), the world body on open and distance education organizes World Conferences every second year. During the last World Conference in Birmingham, UK in 1995, several distinguished specialists from various parts of the world stressed the need for focussing on region specific issues with emphasis on the large budding open and distance education system in the developing countries. ICDE Asia's CODE is a response to that articulated need.

The theme of the conference is Open and Distance Education. Various sub-themes are :

- Social Relevance of Open and Distance Education
- Pedagogy of Open and Distance Education
- Quality and Equivalence of Open and Distance Education
- Educational Technology in Open and Distance Education
- Economics of Open and Distance Education

Proposals in the form of abstracts in about 300 words are invited for presentation in the conference. The abstracts will be accepted till 25 Sept; acceptance will be notified by 10 Oct and the full text paper will be accepted till 30 October 1996.

The Conference is expected to attract 150 experts from various countries in Asia and other regions.

The abstracts and further enquiries should be sent to:

Conference Secretary
ICDE ASIA C/o AIAET
F-5E, DDA Munirka, New Delhi 110 067

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Published by SUTINDER SINGH, on behalf of the Association of Indian Universities, AIU House, 16 Kotla Marg, New Delhi-2.
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